FOUNDRY TRADE JOURNAL
Established 1902
WITH WHICH IS INCORPORATED THE IRON AND STEEL TRADES JOURNAL

Vol. 86 Thursday, May 12, 1949 No. 1706

49, Wellington Street, London, W.C.2
'Grams : " Zacatecas, Rand, London "
'Phone : Temple Bar 3951 (Private Branch Exchange)
PUBLISHED WEEKLY : 26s. per annum (Home and Overseas)

The Second Management Conference

Though not so well-attended as the initial function, the second conference organised by the Council of Ironfoundry Associations at Ashorne Hill last week-end was equally successful. Especially interesting was the lecture by Mr. Howard, of Hayward-Tyler & Company, Limited. In this concern, joint consultation with the staff is of long standing, and the relationship is based on complete frankness. Experience has shown that the workpeople are not particularly interested in the balance sheet and other details of the business, but they are happy in the thought that they are available. This complete frankness, which is shared by everybody, including a representative of the shareholders, tends to make commonsense of the consequences of such matters as the impacts of a national award giving increased wages. The total of the amount of money involved is easily ascertained, but where it is to come from is a different story. Increased selling prices, lowered dividends, inroads into reserves, are amongst the potential sources. Higher selling prices, however, may mean the loss of orders involving either short time—a factor itself tending to increase selling prices—or even a reduced working staff. This latter factor is the last thing any sane individual likes to see. However, it is quickly seen that the one source which can supply the necessary money, with the least detriment to everybody, is increased productivity.

A second subject ventilated was that of sanitary blocks for foundries. Organised by Mr. J. W. Gardom, this was presented in the form of a brains' trust, the members of the panel all being familiar with the subject either as having large units under their control or as designers. The major points brought out were: (1) Shower baths invariably increase in popularity with time. (2) Foot baths are especially popular and a generous allowance should be made initially, as those having a full bath at reasonably frequent intervals appreciate daily use of the footbaths. (3) Splash-rinsing is probably the basic reason for the popularity of the individual wash basin. (4) Duck-boards are dangerous as a potential source of broken toes. (5) Both lockers and baskets for clothes storage during working hours have advantages and drawbacks. This is a matter carefully to be considered before installation. (6) Statistics show that age has no real bearing on the use of showers. (7) Where the sanitary block is controlled by the men with the full cooperation of the trade unions there is an absence of hooliganism and an assurance of success. In this connection we would call attention to the review of a new book on the subject printed on page 444, which is a useful commentary on the subject.

Another interesting session was devoted to sales. There were two Papers, one by Mr. Wilfred Harper and the second by Mr. John Lake—who unfortunately was prevented from being present. Mr. Harper had made a survey of what buyers expected from the foundry salesman. Some specifications were so exacting that only an experienced foundry manager with knowledge of design would satisfy their requirements. It was evident that to-day a perfunctory training of a week or so in the works is inadequate and if proper service is to be given, the representative must be a sound technician. Wisely, he stressed in connection with advertising that the association of the machines of an important user with a particular make of castings is productive of the best results. Throughout the whole of the various sessions, the Chairman's (Mr. Noel P. Newman's) guidance and wise commentary were a major factor in the success of the Conference.

Contents

The Second Management Conference, 431.—Forthcoming Events, 432.—Loam Moulding of an Evaporator-body Casting, 433.—Costing in the Iron Foundry, 439.—Institute Elects New Members, 442.—Book Reviews, 444.—Publications Received, 444.—Amendment to Grinding Regulations, 445.—Notes from the Branches, 446.—The Advance in Steel Prices, 447.—Parliamentary, 448.—General Refractories' Research Work, 449.—News in Brief, 449.—Pig-iron and Steel Production in Great Britain, 450.—Ironfounders' Increased Costs, 451.

International Foundry Congress 1949

The detailed programme for this Congress has been published in "*Metalen*" and what follows is a translation:—

His Royal Highness Prince Bernhard of the Netherlands has kindly accepted the patronage of the forthcoming International Foundry Congress. The final programme has now been compiled and will be set out in Circular Letter No. 2, which will be sent out in the near future in the Dutch, English, and French languages.

Programme

Monday, August 29.

10.30 a.m.—Opening of the Congress in the Hall of the *Koninklijke Vereeniging Indisch Instituut* at Amsterdam, Mauritskade 63. (Ladies are welcome.)

12 noon.—Departure by special tram to Hotel Krasnapolsky at Amsterdam, Warmoesstraat 175, for informal lunch (ladies welcome) at 12.30 p.m.

2 p.m.—Departure of Congress members by special tram to the *Indisch Instituut* for the technical session from 2.30 to 5 p.m.

Members make their own dinner arrangements.

8.30 p.m.—Members and their ladies meet at a place to be decided later.

Tuesday, August 30.

8 a.m.—Delegates meet in the Hall of the Central railway station, Amsterdam. From here they travel by rail to: (*a*) Hengelo and (*b*) Ulft-Doesburg, for visiting (*a*) the foundries of the Koninklijke Machinefabriek Gebr. Stork & Company and the N.V. G. Dikkers & Company, Hengelo, and (*b*) to the foundries of the N.V. Diepenbrock & Reigers at Ulft and the iron, non-ferrous and malleable foundries of v.h. B. Ubbink & Company N.V., Doesburg.

These excursions are for Congress members only. Lunch will be provided by the proprietors of the foundry visited.

8.15 p.m.—Arrive back at Amsterdam. Members make their own dinner arrangements. Evening free.

Wednesday, August 31.

8.30 a.m.—Technical session opens at the *Indisch Instituut.*

12 noon.—Adjournment.

Afternoon.—Departure by special tram to the steamer which leaves about 12.30 for IJmuiden for excursion (*c*) to the works of the Koninklijke Nederlandsche Hoogovens en Staalfabrieken N.V. (For Congress Members only.) Cold lunch on board.

2 p.m.—Arrival at works for visit (*c*). Tea at 4 p.m., depart by steamer for Amsterdam at 4.30 p.m., arriving at 5.30 p.m. Members make their own dinner arrangements.

8.30 p.m.—Supper Dance and Cabaret in the Apollo Pavilion, Amsterdam.

Thursday, September 1.

Meet in the Hall of the Central railway station at Amsterdam for visits to Utrecht and Eindhoven.

Visit (*d*) to Utrecht, to the foundries of the Netherlandsche Staalfabrieken v.h. J. M. de Muinck Zeizer N.V., and of Werkspoor N.V. Lunch at Utrecht at the invitation of the proprietors of the works.

Visit (*e*) to Eindhoven, to the works and foundries of the N.V. Phillips' Gloeilampenfabrieken. Lunch arranged by the management.

These visits are for members of the Congress only.

Arrive on return to Amsterdam at about 6 p.m. Members to make their own dinner arrangements, and the evening is free.

Friday, September 2.

8.30 a.m.—Technical session opens at the *Indisch Instituut.*

12 noon.—Adjournment.

12.30 p.m.—Circular tour through Amsterdam canals (ladies invited), starting from the *Indisch Instituut.* Sandwich luncheon on board, returning to the *Indisch Instituut* at about 2 p.m.

2.30 p.m.—Indian dances and film featuring the Netherlands, with tea at the *Instituut* at 4 p.m.

7 p.m.—Official closing Banquet in the Minerva Pavilion, Amsterdam, ladies invited.

Ladies Programme

Monday, August 29.

10.30 a.m.—Official opening of the Congress in the *Indisch Instituut,* Amsterdam, Mauritskade 63.

12 noon.—Departure by special tram for Hotel Krasnapolsky, Warmoesstraat 175, for informal luncheon at the hotel at 12.30.

2.30 p.m.—Excursion by coach to Loosdrecht. Tea at Hotel "Kasteel De Hoge Vuursche."

6.30 p.m. approx.—Return to Amsterdam. Evening free.

8.30 p.m.—Meeting of all Congress members at a place to be decided later.

Tuesday, August 30.

8.30 a.m.—Departure by coach from the hotels to the flower auction at Aalsmeer.

12.15 p.m.—Lunch at Haarlem, followed by a visit to the Frans Hals Museum and excursion to the coast and dunes.

4.30 p.m.—Tea at Santpoort (Hotel Duinen Kruidberg), returning to Amsterdam at 6 p.m. Evening free.

Wednesday, August 31.

Morning free for visit to museum of own choice. Recommended museums are: The Rijksmuseum, the Gemeentelijk Museum, the Indisch Museum, or the Six-huis. Afternoon free.

8.30 p.m.—Supper Dance and Cabaret at the Apollo Pavilion in Amsterdam.

Thursday, September 1.

Excursion by coach to Delft (the Prinsenhof); The Hague (Peace Palace); Scheveningen; and Noordwijk. Evening free.

Friday, September 2

Morning free.

12 noon.—Meet at the *Indisch Instituut.*

12.30 p.m.—Tour along the canals and docks of Amsterdam, with sandwich lunch.

2.30 p.m.—Exhibition of Indian Dances in the *Indisch Instituut,* with a film featuring the Netherlands, with tea in the *Indisch Instituut* at 4 p.m.

7 p.m.—Closing Banquet in the Minerva Pavilion.

Loam Moulding of an Evaporator-body Casting*

Tackle and Method for a large and complicated Casting

By W. H. Hornby

In the following description of the making in loam of an evaporator body casting, the Author wishes to point out that the methods employed may not be the only ones available, but they were used successfully in the foundry with which he is associated. Actual photographs taken at various stages of production will be the main vehicle for illustration.

The over-all dimensions of the finished machined casting were 10 ft. 7 in. high with a flange diameter of 6 ft. 9½ in. As can be seen from Fig. 1, it is not of simple symmetry, the main feature being the large inspection door aperture of approximately 6 ft. by 6 ft. This flanged aperture was to carry two inspection doors set at an angle of 120 deg. There was a 10-in. dia. flanged steam inlet branch, and also a flanged base, sludge and emptying connections and coil supports. The main wall thickness was 1¼ in.; flange thickness 1¼ in.; base 1¼ in.; and the dome 1¼ in. A feeding head was carried up from the top of the dome flange for a further 9 in. to ensure soundness. Ribs varied from 1 to 1¼ in. The body of the casting was subjected to a hydraulic test pressure of 30 lb. per sq. in. and the coil supports 120 lb. per sq. in.

Pattern Equipment

After discussion with pattern shop as to the method to be used for making, the main pattern equipment was arranged as follows:—(1) A skeleton pattern for the inspection doors carrying the coil supports; (2) a corebox for the lightening core in the base; (3) a pattern and corebox for the steam inlet branch; (4) coreboxes for the sludge and emptying connections; (5) loose bosses and ribs and sectioned base flange; (6) four strickles, one of which had a detachable section; and (7) wooden lags to give the main wall thickness.

Moulding

Owing to the rather small inside diameter, it was decided that the centre core should be entirely built up, after building the mould level to the seating for the skeleton pattern. This would enable all the strickle tackle to be removed before continuing building of the mould. The available head room in the stove was 9 ft. 6 in. and this permitted a first joint to be made at the top of the inspection door print, and the entire job could thus be made in two parts and stoved, rather than by drying the bottom *in situ*. No convenient moulding tackle being available, it was decided to make a new set, there being three castings required off the job with a possibility of others to follow. It was decided to use four binders between bottom plate and first joint, and a lifting plate and one binder for the top piece of the mould.

The bottom plate was a casting 11 ft. 6 in. by 10 ft. and 5 in. thick, with combined lifting and bolting lugs of 1 ft. sq., with cored holes, three lugs were spaced on the 11-ft. 6-in. side and two on the 10-ft. side. The weight was about 8 tons. The 2¼-in. dia. spindle seating was located and drilled and the plate was seated in the pit bottom. A heavy cast-iron girder bridged the pit and was carried on cast-iron columns, giving sufficient headroom for the entire centre core to be built, before it was finally removed. A hard wooden journal was bolted to girder to take the upper end of the strickle spindle.

The foundation course of brickwork was laid in loam on the plate. The strickle for the bottom lightening core and flange was adjusted and the job was built to the top edge of the flange. The two main ingates, to be drawn in after stripping, were bedded-in at this stage. They were 23 in. long, 4 in. by ⅞ in. at the flange end and 3 in. by ¼ in. at the downgate end. The first metal would enter the bottom flange through these main ingates. Whilst this seating was stiffening, the lightening core for the base was made and stoved, and the next binder was made, cast and seated in position, the distance between plate and bottom edge of binder being 12 in. The segmental base flange and the six brackets connecting the top of the flange with the main body of the casting were next set in position.

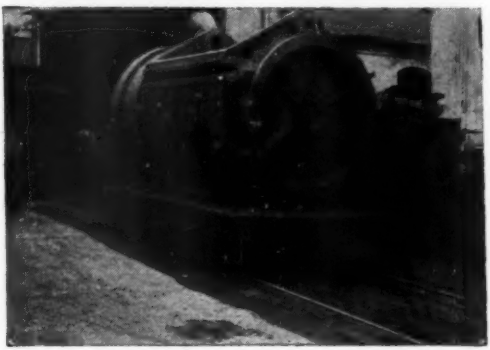


FIG. 1.—FINISHED CASTING ON ITS WAY TO THE MACHINE SHOP.

*A Paper read before the Bristol and West of England Branch of the Institute of British Foundrymen.

Loam Moulding of an Evaporator Body

Four grids carried the neck of loam between the flange and body, as shown in Fig. 2. Building then continued to the top of the brackets. The 2-in. dia. downgates were rammed up with stiff loam in cast-iron bushes. A space was left at each side to accommodate the coil-support core-prints, which extended below the bottom of the skeleton pattern, to within a few inches of the base flange. Loam was swept to shape with the second strickle, to give a seating for the skeleton pattern, and then allowed to stiffen.

The newly dried lightening core was next placed in its print. The metal thickness between the core and mould was filled-in with short wooden lags and the ribs in the core were rammed up with sand. A parting was made on top of the lightening core and cakes of stiff loam were placed in position and swept to shape by the second strickle with the detachable piece removed. The loam was to give the metal thickness between the lightening core and the main body core. The skeleton pattern was next located and anchored temporarily to the spindle. The coil-support print and flange extended into the space left for them and this was next stuffed with loam. From this stage no further work was done on the mould until the main centre core had been fully built up.

Building the Main Centre Core

The spindle was first removed and was not replaced until after the lifting plate had been seated. A short length of 3-in. dia. pipe was used to keep the spindle seating clear of loam. A small grid was rammed up with stiff loam into the print through the lightening core. About half way up the saucer-shaped bottom of the main core, another grid was bedded into position and the small grid was packed and bolted to it. This stage is shown in Fig. 3. All the loam in the saucer was carried on this grid by prods and wrought-iron pieces cast in the grid. Loose wrought-iron bars were laced to the irons cast in the grid to form a basket work to carry the loam at the top edge of the saucer, as is shown in Fig. 4. Packings were carried from the top of the previous grid to a height level with the bottom of the inspection-door print. Here

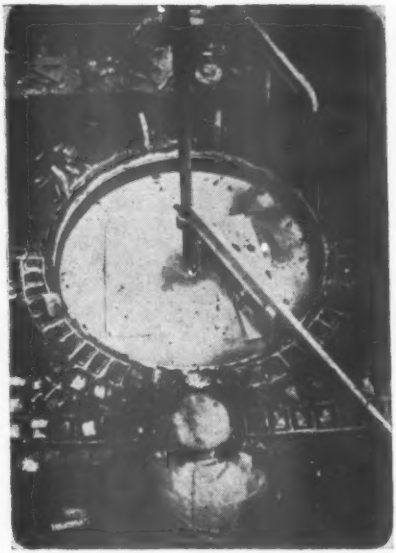


FIG. 2.—SEGMENTAL BASE FLANGE IN POSITION.

FIG. 3.—HEAVY CAST-IRON GIRDER AND SKELETON PATTERN IN POSITION.

FIG. 4.—CAST-IRON GRID BEDDED IN THE "SAUCER." THE 3-IN. PIPE FORMING A SLEEVE FOR THE STRICKLE SPINDLE CAN ALSO BE SEEN.

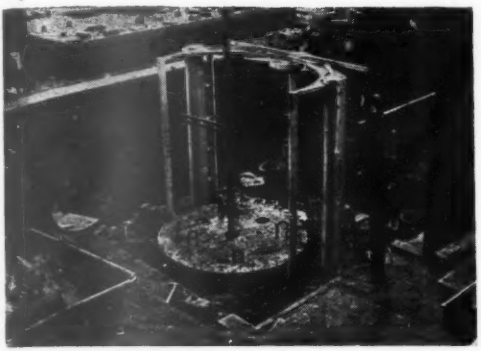


FIG. 5.—LIFTING PLATE IN POSITION; STRICKLE SPINDLE HAS BEEN REFITTED.

another grid was built in (Fig. 5); this was to carry the core extending beyond the inspection door into the print. The main core-lifting plate was next seated in position and firmly bedded.

Details of the Lifting Plate

The plate was 5 ft. 3 in. dia. by 2¾ in. thick; cast in it were three main lifting staples set at 120 deg. to each other; four staples, at 90 deg. each, for bolting together the three grids to be built into the core above the plate; four 4-in. dia. holes for bolting to the plate the grids that were below it; a 6-in. dia. centre hole; four 2-in. dia. vent holes and two small recesses for two of the four bolts in the print. At this stage the grid in the saucer was bolted to the plate. Packings had been carried through the job right from the bottom plate and each grid was packed to its neighbour. The spindle was returned to its seating inside the short piece of pipe, and this was removed by passing it over the length of the spindle.

All grids from this stage onwards were split (Fig. 6) and there was no occasion to remove the spindle again until the core had been fully built-up. The third strickle was next set and bolted to its arm. Two light wooden frames were screwed to the top of the skeleton pattern at the print side. These were to assist in building a taper on the inspection-door print; the taper was 1 in. in 3-ft. or 2 in. on the 6-ft. height of the print. The three grids in the main core were shaped to take the easing bar. The cast-iron easing arrangement extended to a height of 5 ft. 4 in. from the core-lifting plate to a few inches below the joint of main and top cores.

Details of the Easing Bar

The easing bar was 5 ft. 4 in. high, 3 in. wide at the face nearest to the metal, 6 in. wide at the face inside the core and 8 in. from the 6-in. face to the 3-in. face. A short piece of 1½-in. dia. steel bar was cast into a recess on the 6-in. face, so as to assist in rapid removal of the bar during easing of the casting. The core was built in the orthodox manner, using a 9-in. wall for the 180 deg. of core to be swept by the strickle. Four 1-in. dia. hook bolts 5 ft. 3 in. long were built in the print of the core; these were to bolt together the bottommost grid (which was below the lifting plate), to the top grid in the main core. A short piece of the easing bar pattern (Fig. 7) was used instead of the bar during the building of the first few courses of brickwork, due to the difficulty of balancing the heavy cast-iron bar. After each grid was bedded, it was shackled by bolts and fish-plates.

The top grid (Fig. 8) was about 9 in. from the joint of the cores. Cast in the grid were two staples

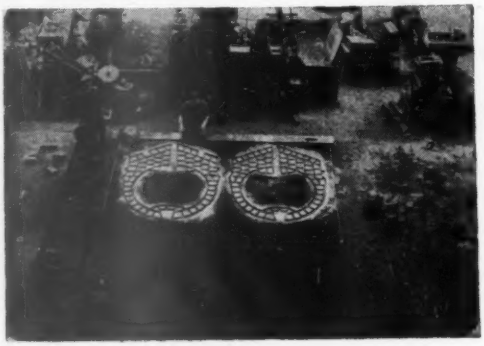


FIG. 6.—OPEN MOULDS PREPARED FOR GRIDS. THE SPLIT FOR THE SPINDLE AND THE LOOPS BEHIND THE EASING-BAR RECESS SHOULD BE NOTED.

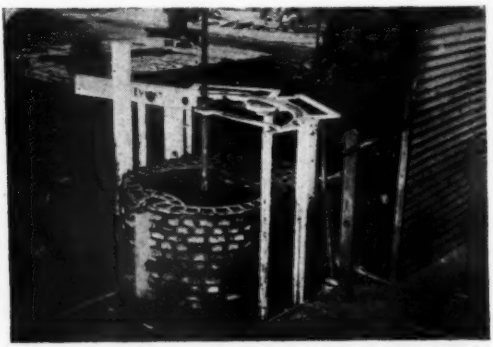


FIG. 7.—MOULD HAS BEEN BUILT UP TO THE SECOND GRID ABOVE THE LIFTING PLATE; THE PATTERN IS ANCHORED TO THE SPINDLE AND THE THIRD STRICKLE IS READY FOR USE.

Loam Moulding of an Evaporator Body

FIG. 8.—THE TOPMOST GRID IN THE BOTTOM PORTION OF THE CORE IS IN PLACE, TOGETHER WITH THE EASING BAR.

to be used for balancing when withdrawing the core. The top 9 in. of core underneath the steam inlet branch was entirely of loam, using loam bricks and pieces of loam-cake. This will be referred to later when giving details of easing the casting. After completing the building, the face of the brickwork was well clay-washed and soft loam was well rubbed in and swept roughly to shape; a thin slurry was next applied and the core was then swept finally to shape.

On the horizontal arm of the last strickle there was a ½-in. step on the bottom edge to give a male and female joint between the main core and the top piece of core. The top piece of core was carried on a grid. The grid had three lifting staples cast in and four loops, also, to be used for bolting to the topmost grid of the core. There were two more grids besides the lifting grid, one immediately above the steam inlet branch and one about 5 in. from the top of the core. Again, a 9-in. wall was used for the whole of this piece of core except for the bulge behind the steam inlet branch. The brickwork was faced-up with loam as described for the previous core. All the sweeping on the core was then finished. This stage is shown in Fig. 9. The spindle and anchoring girder were removed. Fig. 10 shows the wooden thickness-lags in position with bosses, ribs, etc., marked off.

Building of the Mould (2nd Stage)

Two more binders (Fig. 11) were made and cast. They were about 3 tons each as compared with the first and second binders, which were about 4 tons each. Strips of wood, ¼ in. thick were secured to the sides of the main core print flush with the edge of the skeleton pattern. These were to be withdrawn when the mould was built to the top of the inspection-door print; they were merely to give working clearance when the core was withdrawn from the mould. This would show as "flash" on the casting. As building continued, grids were built into the brickwork to carry the loam on the top edges of the ribs and large bosses. Coarse brown paper was used to part the back of the inspection-door print.

FIG. 9.—THE CORE IS SHOWN FULLY BUILT-UP; THE INSPECTION-DOOR PRINT IS COMPLETED, AND THE HOLES TO THE BALANCING STAPLES CAN BE SEEN.

FIG. 10.—CLOSE-UP OF THE CORE SHOWING THE WOODEN THICKNESS LAGS IN POSITION WITH RIBS, BOSSES, ETC., MARKED OFF.

The spacing of the binders was increased progressively, as the greatest strain was taken by the binders at the bottom of the casting. During building, provision was made for vents and the bolting back of the coil-support cores and the combined regulator chamber cores. The joint was made level with the top of the inspection door print.

A small horseshoe-shaped drawback (Fig. 12) was next made beneath the steam-inlet branch. This drawback was carried on a small grid, two lifting staples, about 14 in. long, were cast in the grid. Two more grids were used and all three grids were secured together. The entire drawback was built with loam, liberal use was made of nuggets of loam-cake. A top joint was made on the underside of the steam-inlet flange.

A lifting plate for the top piece of the mould was next made (Fig. 13). The centre hole was shaped to the job, sufficient clearance being allowed between inside edge of plate and the core to pass the plate over the top flange when stripping the casting. There were four lifting lugs, two bolting staples, and two 6-in. dia. holes cast in the plate. The retaining ridge for the bottom edge of the building bars was taken across the corners to cut out unnecessary brickwork in the top piece of the mould.

After making the joint, brown paper was used to part the drawback, a liberal seating of loam being laid to receive the plate, the underside of which had been thoroughly clay-washed. The plate was well bedded down. Segmental grids were used to carry the loam between the edge of the plate and the pattern. These grids were bolted to the grids immediately above the top edge of the next rib. Building was continued to the top of the drawback, where the last grid in the mould itself was built well into the brickwork (Fig. 14); this grid carried all the loam and bricks above the steam-inlet branch. A 6-in. dia. piece of pattern was located in the centre of the 10-in. dia. branch print, and building was continued in the orthodox manner. Two courses of brickwork were laid from the top joint, just below the top of the dome flange, and the last binder was bedded in position. Cast into the binder were two 6-in. dia. holes to take the two main downgates, and an 8-in. dia. hole to accommodate the 6-in. dia. piece of pattern previously mentioned, and two lifting and bolting lugs, also corresponding to the two staples cast in the lifting plate.

The shape of the 9-in. head was obtained by standing 9-in. bricks on end on top of the flange, touching each other all the way round the flange. This was an effective way of improvising, it not being worthwhile to set up sweeping tackle. A joint was made by strickling off the mould level with the top of the centre core. The mould and core were now fully

FIG. 12.—PROGRESS TO THE FOURTH BINDER ABOVE THE BOTTOM PLATE IS REVEALED; THE STEAM-INLET BRANCH IS IN PLACE.

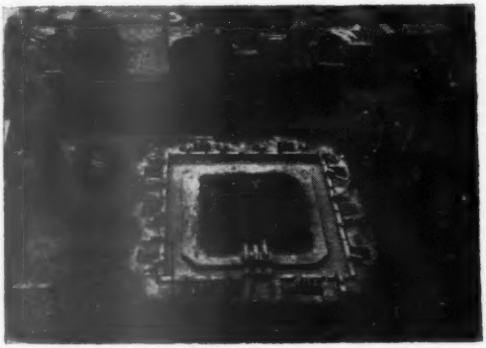


FIG. 11.—OPEN-SAND MOULD PREPARED FOR THE BINDER CASTING.

FIG. 13.—OPEN-SAND MOULD FOR THE COPE LIFTING PLATE.

Loam Moulding of an Evaporator Body

built. After each binder had been bedded, the cast-iron building bars were slipped through the slots, the space between the brickwork and the bar was well stuffed with loam, and a cast-iron wedge was lightly driven in between the inside edge of the slot and the bar itself.

Stripping the Mould and Drying

The bricks forming the head of the casting, the two 2-in. dia. downgates and the piece of pattern on the steam-inlet branch were withdrawn. The top binder was securely bolted to the lifting plate. The wedges behind the building bars were driven home more firmly. The loam joints on the inside of the core and the outside of the mould between top and bottom pieces of mould were carefully marked, to give correct location when closing. All the nuts on the bolts on the inside of the core were given another turn and the wedges between the easing bar and grids were given another few taps to make sure they were firm.

The wooden thickness-lags were withdrawn and the top piece of core was lifted out and seated on a plate. The surface of the core was washed over and defective places were patched up, the plate was next placed on stove for drying. The top piece of the mould was next lifted off and placed on stands for finishing. A slight taper was cut in the load for the head to give better feeding properties. All loose pieces were withdrawn, the surfaces were damped off to assist in making a thorough job of the necessary patching. The mould was next placed on the stove and given the rather liberal drying time of one week.

The seat of the drawback was marked in the same manner as other joints had been marked previously for locating when closing, and the inlet pattern was removed. After unscrewing and removing the top

FIG. 14.—COPE LIFTING PLATE IN POSITION IN THE MOULD; A DRAWBACK HAS BEEN ARRANGED FOR THE STEAM-INLET BRANCH.

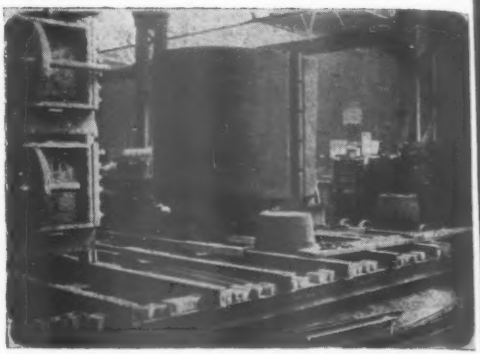


FIG. 15.—BOTTOM SECTION OF THE CORE READY FOR STOVING.

plate of the skeleton pattern and the loam joint of the door print and after the mould had been marked, the bottom piece of core was lifted out. (Fig. 15). Lifting was accomplished by using the three main lifting-staples cast in the bottom plate and the two balancing staples cast in the top grid in the door print. Whilst still slung from the crane, the saucer-shaped bottom was damped off and all necessary patching carried out, it was then lowered on to the stove, being balanced as it would be when ready for casting in the mould. The core was then finished off for stoving during the same night.

(To be continued.)

Corrosion Prevention for Metals

A Press release from Shell Minerals, Limited, of 112, Strand, London, W.C.2, announces the marketing of Shell V.P.I., which is a powerful corrosion inhibitor developed by the Shell Petroleum Company for preventing corrosion of iron and steel between manufacturing steps, in packages for shipment and during storage. It is a synthetic chemical with unique properties that make possible an entirely new method of corrosion-preventive packaging. The material is a white crystalline stable organic compound which very slowly sublimes or vaporises. The vapour—which is odourless, non-toxic and non-injurious to the skin—completely surrounds any article in an enclosed space and prevents corrosion by moisture and air. Direct contact of solid V.P.I. with the metal is not required.

AN INTERNATIONAL MECHANICAL ENGINEERING CONGRESS is to be held in Paris from September 12 to 17. The theme of this congress will be "Production Efficiency," a question of vital importance to the European engineering industry. Details are available from the British Engineers Association, 32, Victoria Street, London, S.W.1.

Costing in the Iron Foundry*

By D. J. Close

(*Continued from page* 418.)

Value of Adopting the Costing System

It seems desirable to give Mr. Lee's opinions as expressed in the Paper he prepared, in which he, as a practical foundryman, was proposing a greater adoption of the cost ascertainment methods.

He says that at the outset of considering such a subject as costing in the foundry, or in any other industry, there is always a tendency to over-complicate the problem if one has the accountancy bias, and to over-simplify it if one is inclined to the production angle. He does not propose that usual British way of compromise be taken in an attempt to reconcile these two opposing points of view, but desires to show the pitfalls of too simple a method of costing, and to urge the reliable ascertainment of manufacturing costs. Not only the reliable costs, but also costs readily comparable with those of other foundries working with a similar costing system. Comparability demands uniformity in the principles of a costing system, and it was the establishment of this uniformity in British foundries that the Council of Ironfoundry Associations emphasised in appointing its Costing Committee.

To summarise, the impression gained from the experience of attending every meeting of the Costing Committee, the two salient points were:—(1) The need for uniformity of method, and (2) the suppression of any tendency to "average." The need for uniformity of method may be instanced by the example of two prominent firms in British ironfounding, both exceedingly well-equipped, both having qualified accountants in charge of an adequate costing staff, both making castings from the same patterns for the same customer, both satisfied that their costs were correctly ascertained, yet one was convinced that the other was too low in his costs, and the other equally convinced that the first man's costs were too high.

Evils of Averages

As an example of the evils of "averaging," Mr. Lee instances his own foundry doing jobbing work of a general engineering character, and including large diesel engine castings. Years ago his overheads were applied solely to skilled labour, and when there was a good run of 7-ton flywheels, struck up in loam, everybody was happy, as tonnage went up and with it output bonus. But the more intricate, and more expensive work fell off, and the end of the year saw an insufficient recovery of overheads, due to the small labour content of the flywheel prices.

In conclusion, Mr Lee says that a natural reaction to opening up the "master plan" for the first time is to say at once "that such a scheme is too elaborate and complicated for my foundry." The intention of the "master plan" is to try and give, on one sheet of paper, a general view of the information already available in the various books a company is bound to keep to run a business satisfactorily. If, however, a reader finds the appearance of this "master plan" too awe-inspiring, just read and follow the text of the book, which Mr. Lee quotes as the "inspired word" on foundry costing.

*A Paper read before the East Midlands Branch of the Institute of British Foundrymen, Mr. H. H. Radford presiding.

DISCUSSION

The President (Mr. H. P. Radford) said that by reason of the fact that the first step towards a comprehensive Costing System was put before the Institute's Conference held in Derby in 1937, it was fitting that the East Midlands should be amongst the first branches to study the Council of Ironfoundry Association's findings as outlined by Mr. T. Lee, and so ably interpreted by Mr. Close.

The time may soon arrive again when the founder is unable to choose all the remunerative jobs. Customers will demand that the good be taken with the bad. What action should be taken? Go back to the old way of gaining on the "swings" of the remunerative job what may be lost on the "roundabouts" of the poor job? Surely individual costs are the only solution. Therefore, methods of production must have the closest attention.

Will the allocation of departmental expenses, that is, the charge for services rendered by other departments, inclusive of the general overhead charges of the establishment, satisfy these other Departments if the foundry takes all the profit (if any) on these charges? Similarly, castings made for other departments will need to show a profit. The transport department is different, as it is run purely on a non-profit-making basis, so that the charge to the foundry at the actual cost is satisfactory.

Valuation of Re-melted Material

As to the very controversial question of remelt, he agreed that the price for costing should be the average of the cost of the mixture. In the first case remelt is consistent with the mixture aimed at and great care should be taken to keep the various mixtures separate for re-use. Any bought scrap at whatever price requires the addition of the other contents of the mixture to bring it up to the mixture value.

MR. ELLIOTT, referring to remelt, said the fact that in it is included a price showed the calculation of the price of the metal. To arrive at the cost of castings at a yield of good castings there were taken into account runners and wasters which tended to increase the cost of good castings. The amount put back into the furnace was the average price of the castings produced. Quite often the pattern shop was treated as an overhead of the foundry.

MR. CLOSE, in reply, said the examples that had been shown were merely the costs of the various grades of pig iron entering into the mixture. For instance:—

100 tons Class A Iron at £8 0 0d.
100 tons Class B Iron at £7 10 0d.
100 tons Class C Iron at £7 0 0d.

Costing in the Iron Foundry

and so on, resulted in an average of £7 10s. 0d. When it was a question of making up a mixture, a certain proportion of yesterday's remelt was normally included, and should be costed at the average price of the new metal. The booklet goes to great length to prove that this was the correct procedure, and not, as was the general practice in the industry, charging this re-melt at bought scrap price.

As to the pattern-shop he failed to see how one could regard it as an overhead expense of any particular foundry. Most people either provided patterns for the foundry to make their castings, or if a pattern shop was run by a foundry, patterns were charged separately to the customer. He had in mind a jobbing foundry producing castings for sale. Where a foundry was only producing castings for its own engineering works, then conceivably all pattern-shop costs were an overhead expense to the foundry, but where it was the business of the foundry to sell its castings, obviously it kept a separate department for patterns and charged the costs to the customer.

MR. IRELAND thought it was extremely unwise to use this scrap at £7 10s. 0d. per ton. Any scrap accruing from the foundry must surely go into scrap stock and return as scrap, otherwise one would have a considerable amount shown as scrap on hand at the end of the year.

MR. CLOSE said that was accepted if obviously it was of that value, but remelt was not scrap, and it gave a wrong impression to use the word scrap at all to the foundry itself. It was merely the same new metals that had been remelted, in a different form.

MR. IRELAND said, assuming the foundry were closed down tomorrow, what would one receive for such scrap?

MR. CLOSE insisted that that was important, but asked how many foundries expected to close down tomorrow. It was an extreme case, when one would only get bought-scrap value, but if the foundry was continuing to work, yesterday's remelt was used next day. One did not accumulate remelt.

MR. IRELAND suggested that the term "circulating" scrap would be better.

MR. CLOSE thought that the name was confusing, and he would recommend discarding the word "scrap" altogether, and call the material "remelt." The word scrap meant something of no value, and that was the seat of the whole trouble. If the booklet had used an expression such as remelt, probably this debatable point would not have arisen.

MR. ELLIOTT asked as to how Mr. Lees arrived at his price of a casting.

MR. CLOSE said that the whole point was that one was using this remelt instead of new metal. If it were assumed that a new business was opening up and that it was proposed to melt 100 tons of metal, one would have to use 100 tons of new pig iron. To-morrow, only 60 tons of new pig and 40 tons of runners and risers from the previous day would have to be melted.

MR. RUSSELL recalled the heated arguments relating to the Institute's Costing Report of 1937, to which Mr. Radford referred. He could not quite remember their conclusions, but he agreed with the previous speaker that theoretically it should be possible to disregard remelt if one kept a constant amount of it, always assuming that the value was the same, and that a £10 pig iron goes back to a £10 mixture, and the cheaper grades to the cheaper grades. It was more difficult if it was for different mixtures, and therefore the value of the remelt was not necessarily the average value of the mixture. At each melting one lost at least 4 per cent.; therefore with a low yield of casting only giving a yield of one third, one was putting two thirds, say 67 tons, back again, out of which there was another 4 per cent. loss. The recommended method was undoubtedly the only safe method. It was a little cumbersome, and could be used for only one mixture, but it must be remembered this plan had been devised to deal with every foundry.

As to the pattern shop, one must not lose sight of the loam-moulding foundry, where there were no patterns other than strickles and tackle, and there the pattern expenses were almost unavoidably charged to the foundry, and thus became a considerable amount. The maintenance of patterns, where it was not recoverable from the customer, must be charged to general overheads, and one could only take out as individual items such patterns as one could sell direct to the customer.

He would have liked Mr. Close to have spent a little more time on the last part of the method, where the foundryman saw the actual cost of any particular job. It would have shown how the moulding costs had to have very considerable percentages added to them. On the management side the great difficulty was the enormous amount to which the percentages totalled. Comparing, for example, hand moulding with its small overheads, with mechanisation, which carried considerable overheads, the great difficulty with mechanisation was that it was very easy to reach percentages of 1,000 or more to be added to the piecework price.

MR. CLOSE agreeing with Mr. Russell's views, said he did show the job cost ascertainment sheets, the top part of which provided space for the details of each individual casting, with the individual amount of runners and risers, and gave the yield.

Ratio of Metal Melted to Good Castings

On the question of remelt once more, for each mixture an average cost per ton was produced, and used through the whole of the preparation of any particular cost of an individual casting. The average cost per ton was calculated on all new metal, so that remelt was in fact disregarded except that the amount of metal charged to make any particular casting was used to ensure that the loss in melting was recovered. Assuming a yield of 50 per cent. for a casting weighing 2 tons, 4 tons of metal was poured into the mould to account also for runners and risers. Actually to produce this two-ton casting 4 tons plus 4 per cent. was charged into the cupola, and this amount was charged on the cost sheet at the mixture price, and the cost of the casting was credited with 2 tons of

remelt. Thus, for an individual casting with the remelt credited as provided for on the bottom of the job-cost ascertainment sheets, the cost of *melting* 4 tons plus 4 per cent. was used, while only 2 tons of metal required for that particular casting was charged to the cost.

On the question of patterns, for instance, strickles, these would, of course, have to be charged to the department using them, and would usually be dealt with in the same way an engineering department would deal with loose tools. Where a pattern shop was dealing with pattern maintenance, obviously the charges incurred in maintaining patterns must be charged as an overhead expense against the particular department of the foundry for which the pattern work was being done.

On the question of high percentages, the system recommended that part of the overheads should be recovered on a weight basis, so that where there were heavy castings with a low labour charge, if one recovered solely on these percentages, one could get a heavy casting lightly loaded with overheads. With a more complicated casting carrying a higher labour charge in its cost thereby recovering more overheads, it would result in higher prices. All the expenses incurred in any particular department must be recovered in the selling price of the casting.

Modification for Mechanised Foundries

MR. RUSSELL suggested that for mechanised foundries this costing system should have some slight alteration because of the enormous overheads. There should be some method in this system of bringing in the volume of sand used. To make a ton of castings it was necessary to handle something like 14 tons of sand. With mechanical handling the cost was taken away from labour and put on machines. A factor other than weight and wages had to be brought in, if it were possible, in the system—something, possibly, on the basis of box size.

MR. CLOSE, agreeing, said that in some American factories particularly, the overhead costs were very high in comparison with the labour, the more so in the case of process costing, where the actual machine and equipment expenses far outweighed any considerations of labour costs required to operate the system, and the same thing applied to a mechanised foundry. The booklet did not make any provision for that sort of thing, and it was one point which had to be left to the individual accountant of any particular foundry. One must always remember that the booklet had been produced two years earlier, and the tendency was more towards mechanisation now than it was then, particularly as at that time it was difficult to obtain plant, or permission to build, etc., so probably the point was not given the consideration it really deserved.

MR. ELLIOTT said in the mechanised foundry overhead was recoverable, and could be charged against the foundry as a whole. It should be amply recovered as mechanisation gave higher production and lowered cost for a casting.

Separate Consideration Warranted

MR. RUSSELL, agreeing, said that the selling price should be less, for where one used to pay 6d. for labour one now paid 1d., but 250 per cent. on 6d. became 1,500 per cent. on 1d. Any slight variation in the 1d. cost would have a larger bearing on the final cost. The value of the labour in a mechanised foundry was small, but how was one to recover it?

MR. BOOTH, speaking as a Member of the Institute of Costs and Works Accountants, said he was connected with the rubber industry, where there were two methods of operation, one plant having a capital cost of something like £28,000, and the other only £1,000. He treated the expensive plant entirely on its own as a separate department, covered by its own overheads. Could not a mechanised foundry be dealt with on similar lines?

MR. CLOSE said the foundries were similarly departmentalised, and the increased output by mechanisation would have an effect on the overheads because if the output were doubled the recovery on weight was doubled, but not sufficient would be recovered on weight to prevent higher percentages on wages, if no other method was used. The system being discussed was recommended for general use, and it did not provide for any such specific instances.

MR. FORSYTH thought it possible that the system put too much emphasis on higher overheads offset by higher wages. To reduce the cost of the casting was the real answer to it.

Forthcoming Events

(Secretaries are invited to send in notices of meetings, etc., for inclusion in this column.)

MAY 17.

Institution of Chemical Engineers.

"The Fabrication of Chemical Plant in Stainless Steel," by A. C. Branch, M.I.Mech.E., and J. L. Sweeten, M.A., B.Sc., in the Apartments of the Geological Society, Burlington House, Piccadilly, London, W.1, at 5.30 p.m.

MAY 18.

Institution of Works Managers

London Branch:—"Running the Small Factory," by A. H. Huckle, at the Waldorf Hotel, Aldwych, London, W.C.2, at 6.45 p.m.

MAY 19.

Institution of Production Engineers.

London Senior Section:—"Modern Aspects of Centreless Grinding," by A. Scrivener, M.C. The Institution Awards for 1948 will be presented by Dr. H. Schofield, the President, immediately prior to the lecture. The meeting will be held at 7 p.m. in the Assembly Hall of the Royal Empire Society, Northumberland Avenue, London, W.C.2.

AT AN EXHIBITION OF CALCULATING MACHINES held at the University of Sheffield at the end of April, there was shown, by courtesy of Hadfields, Limited, a device capable of computing the internal temperatures of hot bodies, such as steel billets or castings of simple form.

Institute Elects New Members

At a meeting of the Council held at the Midland Hotel, Manchester, on April 2, the following were elected to the various grades of membership of the Institute of British Foundrymen:—

FIRST LIST

As Subscribing Firm Member

Mather and Platt, Limited, Park Works, Manchester, 10 (representative, W. M. Aitken).

As Members

A. R. Abraham, B.A., director, Mansfield Standard Sand Company, Limited; *W. M. Aitken, foundry superintendent, Mather & Platt, Limited, Manchester; J. Cleasby, master patternmaker, H. W. Hancock & Company, Limited, Nottingham; C. R. Harrison, director, R. C. Harrison & Sons (Brass Founders), Limited, Leicester; *J. W. Hodgkinson, master patternmaker, Elliott Musgrave, Limited, Bradford; H. H. Kessler, foundry manager, Sorbo-Mat Process Engineering, Missouri, U.S.A.; *H. F. Mackenzie, foundry manager, Horseley Bridge & T. Piggott, Limited, Tipton; C. W. Ridge, general manager and consulting engineer, Scaw Metals, Limited, Johannesburg; A. W. Sommerville, plant engineer, Ford Motor Company; K. Stolba, engineer, Birla Brothers, Limited; K. R. Tait, B.Sc.(Eng.), technical assistant, Union Steel Corporation of South Africa, Limited; J. C. Wharton, foundry manager, G. E. Hider & Son, Torquay.

As Associate Members

J. A. Anderson, metallurgist, The British Piston Ring Company, Limited; Coventry; W. Archer, foundry foreman, Ley's Malleable Castings Company, Derby; J. E. Baugh, foundry chargehand, Thomas Green & Company, Limited, Coseley, Staffs; J. Beresford, foundry foreman, Rainwater Castings, Limited, Ashton-under-Lyne; A. Bloomfield, chargehand, J. Sagar & Company Limited, Halifax; T. G. Bradley, foreman moulder, Stanton Ironworks Company, Limited; A. Connor, foreman coremaker, P. R. Jackson & Company, Limited, Salford; A. R. Cotterell, chief metallurgist, Bayliss Rolls, Limited, Wolverhampton; J. Cummings, foundry foreman, Rochdale Aluminium & Bronze Foundry Company, Limited; J. N. P. Downing, assistant works manager, N. Downing & Sons, Limited, Stockton-on-Tees; A. R. Evans, loose pattern moulder, The Vaughan Crane Company, Limited, Manchester; G. W. Greenhill, assistant metallurgist, Sterling Metals, Limited, Coventry; T. Harrison, foundry foreman, Serck Radiators, Limited, Birmingham; T. Kearsley, foreman patternmaker, Vaughan Crane Company, Manchester; A. Kent, controller, foundry costing and estimating department, Ley's Malleable Castings Company, Limited, Derby; G. C. Leak, brass foundry chargehand, Appleby Frodingham Steel Company, Limited, Scunthorpe; J. A. Lewis, works chemist, Bamfords, Limited, Uttoxeter; J. R. Lewis, assistant foreman patternmaker, Grayson, Rolle & Clover Docks, Limited; T. Milnes, pattern shop foreman, David Brown Foundries Company, Penistone; A. L. Morley, foundry manager, Thomas Perry, Limited, Bilston, Staffs; R. T. Morley, foundry foreman, Morley Brothers, Halifax; S. F. Myers, foundry foreman, Bamfords, Limited, Uttoxeter; J. Partington, foreman, Joseph Berry, Limited, Manchester; B. N. S. Perry, B.Sc., works manager, G. Perry & Sons, Leicester; J. H. Pimblett, foreman moulder, Hardings Castings, Limited, Warrington; R. Player, assistant to works manager, Sterling Metals, Limited, Coventry; G. Poyser, pattern inspector, Ley's Malleable Castings Company, Limited, Derby; R. Robinson, foreman, Joseph Berry, Limited, Manchester; J. Sephton, floor moulder, Hardings Castings, Limited, Warrington; R. F. F. Shelley, foundry chargehand, Midland Electric Manufacturing Company; C. B. Shimmin, foreman patternmaker, Crossley Motors, Limited, Stockport; H. E. Shipley, foundry foreman, Ley's Malleable Castings Company, Limited, Derby; F. S. Smith, foundry technical representative, Colin Stewart, Limited; G. P. Smith, senior draughtsman, C. & B. Smith, Limited, Wolverhampton; E. Tinkler, chargehand coremaker, Noble & Lund, Gateshead-on-Tyne; F. W. Hodgson, patternmaker, Sheepbridge Stokes Centrifugal Castings Company, Chesterfield.

As Associates (over 21)

*J. Baston, floor moulder, Jarrow Metal Industries, Limited; S. K. Gejji, works chemist, Mysore Kirloskar, Limited, India; G. L. Harrison, student, The Worshipful Company of Founders; A. J. V. Hill, foundry inspector, The Bristol Aeroplane Company, Limited; R. Keegan, iron moulder, Petrie and McNaught, Limited, Rochdale; D. A. Leadsom, patternmaker, Fawcett, Preston & Company, Limited, Bromborough, Cheshire; G. E. Morton, metallurgical assistant, British Cast Iron Research Association, Alvechurch; R. K. G. Moulding, foundry draughtsman, Sterling Metals, Limited, Coventry; N. K. Mukherjee, engineer, James Alexander & Company, Limited, Barrhead; A. M. Phatak, foundry foreman, Paragon Engineering Company, Limited, Bridport Dorset; C. Raybould, clerk, Bilston Foundries, Limited; T. R. Scott, Clerk, Hale & Hale (Tipton), Limited; N. C. Sheppard, technical representative, Foundry Services, Limited; Te-Yu Tse, research student, College of Technology, Manchester.

As Associates (under 21)

D. C. Cornaby, foundry apprentice, Audley Engineering Company, Limited, Newport, Salop; G. Heginbotham, apprentice, Sykes & Harrison, Limited, Bangor; R. I. Massey, laboratory assistant, Duport Foundries, Limited, Tipton, Staffs; D. L. Prosser, apprentice moulder, Audley Engineering Company, Limited, Newport, Shropshire; C. J. G. Richards, assistant metallurgist, Bayliss Rolls, Limited, Wolverhampton; R. J. Shelton, apprentice patternmaker, Hearsall Pattern and Castings Company, Limited, Coventry; W. E. Edwards, metallurgical trainee,

*Transferred.

J. Blakeborough & Sons, Limited, Brighouse; G. R. Tomlinson, assistant to foundry metallurgist, Stanton Ironworks Company, Limited, Nottingham.

SECOND LIST

As Members

J. G. Bell, managing director, Gray & Caldwell, Limited, Paisley; H. Cerutty, metallurgist and consultant, Sydney, Australia; S. N. Chakravarty, foundry foreman, Mukand Iron & Steel Works, Limited, Bombay, India; A. Davies, foundry manager, Peter Brotherhood, Limited, Peterborough; W. J. Dawson, general manager and senior partner, Strathnairn Iron Foundry, London; V. Lloyd, director, Nevoll Tubes, Limited, Cardiff; K. Marshall, director, Joint Iron Council, London; J. A. Prior, managing director, Wilmer Lea Foundries, Stratford, London; L. W. Rees, foundry manager, J. Jefferies & Sons, Bristol; J. H. Smellie, consulting engineer, J. H. Smellie & Partners, Limited, Glasgow; G. W. Smith, foundry manager, Walter Macfarlane & Company, Glasgow; T. G. Strong, chief metallurgist, Albion Motors, Limited, Glasgow; *A. Talbot, foundry foreman, Le Grand Sutcliff & Gell, Limited, Southall, Middlesex; D. Thomas, chairman, Glanmor Foundry, Llanelly; A. C. Yallop, managing director, Globe Foundry (Stratford), Limited, London; *A. R. Wizard, general manager, Sundry Equipment Manufacturers, London.

As Associate Members

L. M. Abrahams, technical instructor, L.C.C. School of Engineering & Navigation, London; J. A. Ayerst, works manager, Conrad Parlanti Castings, Herne Bay, Kent; W. G. Bateman, foundry foreman, Tubal Cain Foundry and Engineering Works, Cardiff; W. Bruce, foundry foreman, British Bath Company, Limited, Greenford; F. G. Easter, instructor, L.C.C. School of Engineering & Navigation, London; F. J. Gardner, manager, T. R. Creighton, Limited, London; J. D. Glen, chief chemist and metallurgist, North British Locomotive Company, Limited, Glasgow; A. G. Howell, works manager, Tubal Cain Foundry and Engineering Works, Cardiff; J. T. Smith, foundry foreman, East African Railways, Dar-es-Salaam, Tanganyika, E. Africa; F. Woods, foreman, Newman Industries, Limited, Yate, near Bristol.

As Associates (over 21)

H. Moss, cupola man, H. D. Evans Foundries, Limited, Cardiff; A. N. Stoddart, foreman moulder, Russell & Company, Carluke, Lanarkshire; G. Williams, foundry draughtsman, Brown Lennox & Company, Limited, Pontypridd, Glamorgan; T. H. Wilson, foundry metallurgist, Ford Motor Company, Limited, Dagenham; H. A. Wincer, foundry trainee, Ransomes, Sims & Jefferies, Limited, Ipswich; L. S. G. Young, patternmaker, Renold & Coventry Chain Company, Limited.

As Associates (under 21)

E. G. Donaldson, student, Royal Technical College, Glasgow; A. I. Isaac, apprentice steel moulder, Brown Lennox & Company, Limited, Pontypridd, Glamorgan; J. R. Jones, apprentice moulder, Brown Lennox & Company, Limited, Pontypridd; R. Marshall, apprentice moulder, John Brown & Company, Limited; T. C. Morgan, foundry apprentice, Brown Lennox & Company, Limited, Pontypridd; C. McLafferty, apprentice moulder, John Brown & Company, Limited, Clydebank, Dumbartonshire; J. Smith, assistant metallurgist, H. Balfour & Company, Limited, Leven, Fife.

*Transferred.

THIRD LIST

As Subscribing Firm Members

British Engines, Limited, Glasshouse Street, St. Peters, Newcastle-upon-Tyne, 6 (representative, R. F. Hudson); T. J. Priestman, Limited, Cupro Foundry, Leopold Street, Birmingham, 12.

As Members

M. Mather, proprietor, M. Mather & Son, Ilford, Essex; E. H. Page, general manager and secretary, Chamberlin & Hill, Limited, Walsall, Staffs; *W. Redmayne, foreman patternmaker, "Wilson's" Forge (1929), Limited, Bishop Auckland, Co. Durham.

As Associate Members

W. Green, foreman moulder, Davy & United Roll Foundry, Limited, Billingham, Co. Durham; H. Humphreys, steel plant manager, Davy & United Roll Foundry, Limited, Billingham, Co. Durham; A. W. Matthews, metallurgist, George Morgan, Limited, Birmingham; S. J. Pittman, coreshop foreman, William Shaw & Company, Limited, Middlesbrough; C. B. Wright, assistant foundry manager, Davy & United Roll Foundry, Limited, Billingham, Co. Durham.

As Associates (over 21)

J. R. Alderson, journeyman moulder, W. Shaw & Company, Limited, Middlesbrough; E. Carmichael, chargehand foundry labourer, C. A. Parsons & Company, Limited, Newcastle-upon-Tyne; F. Cheesebrough, journeyman moulder, W. Shaw & Company, Limited, Middlesbrough; W. Croft, patternmaker, Dorman Long & Company, Limited, Middlesbrough; R. W. Graham, journeyman moulder, W. Shaw & Company, Limited, Middlesbrough; R. W. G. Layton, assistant rollmaker, Jarrow Metal Industries, Limited; W. Lister, floor moulder, John Robson (Shipley), Limited; E. C. O'Connell, journeyman moulder, W. Shaw & Company, Limited, Middlesbrough; C. Ord, journeyman moulder, W. Shaw & Company, Limited; L. Ord, journeyman moulder, W. Shaw & Company, Limited; L. Saunders, patternmaker, Dorman Long & Company, Limited, Middlesbrough; J. C. Smith, chargehand patternmaker, Dorman Long & Company, Limited, Middlesbrough; J. T. Wilson, journeyman moulder, W. Shaw & Company, Limited, Middlesbrough.

As Associates (under 21)

R. Hall, assistant chemist, Jarrow Metal Industries, Limited; C. R. McKie, student, Hopkinsons, Limited, Huddersfield.

FOURTH LIST

As Associate Member

J. L. Arbuthnott, senior foreman, Port Engineering Works, Howrah, Calcutta, India.

Book Reviews

Aluminium and Its Alloys. By S. A. J. Sage. Published by Emmott & Company, Limited, 31, King Street West, Manchester, 3. Price 2s. 6d. net.

This little book is ideal for the engineer who wishes to have in handy form a concise account of the normal range of aluminium alloys and their associated mechanical properties. It is not meant for the experienced light-alloy founder, though the beginner will find much of interest in studying the alloys he does not normally make. The alloys dealt with include aluminium alloyed with copper; silicon; magnesium; and zinc, plus the well-known more complex ranges. Both castings and forgings are included.

Works Lavatories. Published by the Industrial Welfare Society, 48, Bryanston Square, London, W.1. Price 12s. 6d. post free.

Many books claim to be of general interest, whereas in truth they are but works of reference. In this case the opposite is stated, yet the reviewer found it of such worth that he read it from cover to cover. The case for a sanitary block is logically stated as to essentials and minimum requirements. Then the managerial aspect is dealt with, followed by a summary of the legal requirements. The Society's views on this topic conclude the generalities of the subject. Thereafter, the book is strictly technical and deals first with cloak rooms, then washrooms, then sanitary accommodation, and finally, shower baths. In each case a suggested specification is included, but these are not meant to be of universal application or yet the latest development. For instance, the cloakroom depicted in Plan 1 is positively prehistoric when compared with the one the reviewer recently inspected in the East Midlands, yet by current standards it is excellent. The plan shown for the washroom has two circular fountain-type washbasins with umbrella sprays, together with hot-air hand driers—both of which are theoretically efficient, but which, unfortunately, are unpopular. The sanitary block is excellent and the details shown are worthy of close study. The requirements for men are well understood, but the reviewer confesses he had not visualised that the problems to be associated with the female sex need special study. Anxiety, discomfort, blocked drains are but a few of the results arising from the neglect of this subject. The fourth plan, a lay-out for showers, is quite good, though the arrangements for the actual showers is still somewhat primitive judged by the most modern standards. Following these four tentative specifications, is an alphabetic index giving information—often detailed—on such subjects as taps, flooring, doors and so forth. As the foundry industry is intensely and very actively interested in amenities, its executives will find in this book much technical information not easily found elsewhere. They will, like the reviewer, appreciate both the common-sense handling of a topic excluded from drawing-room conversation and the high literary standard attained.

V. C. F.

Publications Received

The Magnetic Properties of Nickel-iron Alloys. Published by the Mond Nickel Company, Limited, Sunderland House, Curzon Street, London, W.1.

The peculiar magnetic properties of the nickel-iron alloys, with their wide variations, have assumed increasing importance with the development of the science of electronics and a wide range of applications has now been established. Much interest, therefore, attaches to this publication, and no doubt it will prove very useful to designers and users of communication and electronic apparatus. It reviews the various groups of alloys, indicates their special properties and describes the applications for which these properties are appropriate. An extensive bibliography and a selection of graphs add materially to the publication's usefulness for reference purposes.

Machinery Colours; Safety Colour Code and Pipe Identification Colours. Prepared and published by the British Colour Council, 13, Portman Square, London, W.1. Price 3s. net.

The receipt of this colour chart is particularly timely as many foundries are experimenting with colour schemes or at least envisage doing something in this direction during the annual closing of the works for the holiday period. For general machinery, a choice of nine colours is given to meet individual taste. For the Safety Colour Code, this is limited to six:—*Yellow*—Attention! This is to be used at those positions where one bumps one's head or is liable to be tripped up. *Orange*—Alert! This is to be used with discretion on the "business" parts of machinery, the use or misuse of which may involve an accident. *Red*—Danger! This is reserved for fire extinguishers, fire alarms and the like. *Blue*—Caution! Of a temporary nature, this colour is used to indicate machinery under repair or out of commission and "Do not touch" labels. *Green*—Safety! The use of this colour is suggested for first-aid kit and to indicate the position of rest rooms, ambulance stations and the like. *White*—Cleanliness. The standard use is for painting the borders of gangways or for encircling litter bins. With these colours go a series of simple symbols for the benefit of those suffering from colour blindness.

Finally, there are shown the colours (which should be standardised internationally) for pipe lines. It is suggested that it may not be necessary to paint the whole pipe, but colour indications should be ringed at short intervals. Yellow is for gas; light brown for oil; pale blue for hot water; orange for electricity; dark green for central-heating; sea green for sea water; maroon for steam; dark blue for cold fresh water; red for fire pipe-lines; grey for refrigeration; white for compressed air, and black for drainage. Every foundry should be in possession of this colour chart so that the contractors or maintenance staff can be made aware of existing recommendations.

Amendment to Grinding Regulations

The Minister of Labour and National Service has given notice that he proposes to make two codes of Special Regulations amending, respectively, the Grinding of Metals (Miscellaneous Industries) Regulations, 1925,* and the Grinding of Cutlery and Edge Tools Regulations, 1925.† The proposed Regulations are the outcome of the decision of the Court of Appeal in the case of Franklin *v.* Gramophone Company, Limited (1948 I.K.B. 542) in which certain difficulties arose as to the interpretation of the Grinding of Metals (Miscellaneous Industries) Regulations, 1925. In the light of these difficulties, the Minister undertook to review the Regulations, and he has reviewed at the same time the Grinding of Cutlery and Edge Tools Regulations, 1925, regarding which similar difficulties are liable to arise. The draft Regulations now published are the result of this review.

Copies of the draft Special Regulations, which are entitled respectively the Grinding of Metals (Miscellaneous Industries) (Amendment) Special Regulations, 1949, and the Grinding of Cutlery and Edge Tools (Amendment) Special Regulations, 1949, may be obtained from H.M. Stationery Office at York House, Kingsway, London, W.C.2, or their Edinburgh, Manchester, Birmingham, Cardiff, Bristol and Belfast offices, or through any bookseller.

Any objections to either code of draft Regulations by or on behalf of persons affected must be sent to the Minister on or before May 31, 1949. Any objection must be in writing and must state:—(*a*) The specific grounds of objection; and (*b*) the omissions, additions, or modifications asked for. Objections may be addressed to the Secretary, Ministry of Labour and National Service, 8, St. James's Square, London, S.W.1.

*Statutory Rules and Orders, 1925, No. 904.
†Statutory Rules and Orders, 1925, No. 1,089.

A Medieval Bronze Bowl

From time to time, the Journal has noted the discovery of Roman relics in the foundry of S. Russell & Sons, Limited, of Bath Lane Foundry, Leicester. A communication from the Transactions of the Leicester Archæological Society (Vol. XXIII, Part 1) contains an illustrated description by Mr. Frank Cottrill, M.A., of a bronze bowl dug up during the excavations for a drying stove. It is thought to have been made at Aix-la-Chappelle during the thirteenth century. It has been presented to the Leicester Museum by the directors of the Russell concern.

VICTOR MOYLE & COMPANY, 38, Park Road, Hampton Wick, near Kingston-on-Thames, have just installed in their iron foundry a 3-ton electric travelling crane, by Paterson Hughes Engineering Company, Limited. This crane is equipped with De Renze Holmes cam-operated contactor controllers which give at will, a very slow lowering operation especially suitable for closing down large moulds over cores.

Forty Years Ago

The editor, in the May issue, decided to indulge in a little prophesying. Writing of malleable, he thought, "It is quite within the bounds of probability that a very few years will see such advances made that the old and troublesome process of annealing, around which centre the majority of the difficulties of the trade, will be condemned and consigned to the limbo of obsolete practices." In an article on "Gear-wheel Moulding Machines" the author states that the earliest type was invented in 1855 by Mr. P. R. Jackson. There are good practical articles on "Why Crucibles Fail" and "Casting Chains" and Die Castings" (by Mr. H. H. Doehler, of New York). Rather elementary, as would be expected, is one on motor-car cylinders. Dr. Geilen Kirchan, who for many years was editor of *Die Giesserei*, is the author of an article on the "Removal of Sulphur in the Electric Steel Furnace."

German Foundry Production

According to *Die Giesserei* the total production of iron, steel and malleable castings in the bi-zone areas of Germany was, during 1948, 1,020,599 metric tons, of which 93,603 were steel. There has been a noteworthy increase in production during 1948, for in January the output of iron, steel and malleable were 50,191, 5,475 and 2,641 tons respectively, while, by December, the monthly production had grown to 104,987, 11,679 and 6,013 metric tons. In order to give a picture of present production as compared with prewar, the following figures are illuminating:—In 1936 the output of the whole of Germany of ferrous castings was 3,511,000 metric tons and, of the bi-zone area, 2,305,000 tons. If the December monthly average be maintained then current production is now of the order of 1,372,000 tons per annum in the bi-zone area.

Latest Foundry Statistics

The March issue of the Bulletin of the British Iron and Steel Federation states that on February 5 the total number of all ironfoundry employees was 150,582, showing a gain of 995 during the month. Of this increase, 939 were males and 56 females. The steel foundries at 19,786 also showed a gain of 224 workpeople—this latter figure took into account a loss of 16 females. The quantity of metal melted for making steel castings was 8,200 tons in February, just 200 tons greater than in January.

Works Visit Postponed

The visit of the London Branch of the Institute of British Foundrymen to the works of Gillett & Johnston, Limited, Croydon, which was to have taken place on May 25, has been postponed owing to unavoidable circumstances. The revised date will be announced shortly.

SANTON, LIMITED, Somerton Works, Newport, Monmouthshire, have designed an placed on the market a new type of apparatus for the rapid and economic supply of hot water for tea-making.

Notes from the Branches

London Branch—East Anglian Section

The Annual General Meeting of the East Anglian Section of the London Branch of the Institute of British Foundrymen was held in the Lecture Hall, Central Library, Ipswich, on April 14, Mr. L. W. Sanders presiding. The Annual Report was presented by Mr. A. F. Hammond, acting secretary, as follows:—

The past session the Section has provided seven monthly meetings, which were:—"Development of Foundry Sand Control," by Mr. G. L. Harbach; "A Symposium on Special Moulds," sponsored by Crane, Limited; Ransome & Rapier, Limited; Reavell & Company, Limited; and Lake & Elliot, Limited; a film, "A1 at Lloyd's"; "Core Binders," by Mr. W. B. Parkes, of the British Cast Iron Research Association; Mr. J. Blakeborough's film on core blowing, entitled "Sandstorm Secrets" and one on "Mechanical Handling of Ferrous and Non-ferrous Metals"; "Steel Castings," by Mr. W. L. Hardy (presented by Mr. S. Bridger), and Mr. J. W. Gardom's talk on roller conveyors in the foundry. It is desired to record here a tribute of appreciation to the authors and foundry managements whose co-operation made this satisfactory programme possible.

The Section suffered a great loss in November when the Honorary Secretary, Mr. A. N. Sumner, left the area to take up an appointment with the B.C.I.R.A. The excellent work that Mr. Sumner has done for the Section since 1940, includes, not only the general administrative work, but also his continued success with the Ipswich School of Technology. It must also be remembered that under his secretaryship the membership steadily increased from 39 members to 91. Members are all very sorry that he has left the Section and wish him well in his new appointment.

The present membership has once more slightly increased, five new members having joined since the last Annual General Meeting, making a total of 95 and one member firm. Generally, the technical meetings have been well attended; an average of 30 members per meeting represents 33 per cent. of the total membership as against 29 per cent. for the previous session. It is hoped that this Section will continue to grow in strength and at some future date assume full branch status.

The report was adopted.

Election of Officers

The following officers were elected for the ensuing session:—As *President*, Mr. W. L. Hardy; as *Senior Vice-president*, Mr. A. H. Horton; as *Junior Vice-president*, Mr. V. W. Child; as *honorary secretary*, Mr. L. W. Sanders. To serve on the *Council* for three years, Mr. R. J. Hart, Mr. W. E. Cates, and Mr. C. N. Jennings; and Mr. Watson (two years).

Roller Conveyors

Following the business meeting, a lecture was given by Mr. J. W. Gardom on "The Utilisation of Roller Conveyor in the Foundry," illustrated by slides. The lecture included not only the uses to which roller conveyor can be put, but also the construction of the actual roller, which to the ordinary foundryman is a matter of some interest. A rather lengthy discussion followed and many interesting questions were asked. Mr. Ward asked if snap-flask type moulds could be used on roller conveyors, to which Mr. Gardom replied that there was no objection as long as bottom boards were employed. Mr. Carrick was also interested in roller conveyor and asked several questions regarding the bracing of the track and what constituted adequate stops at the end of the line. On the subject of bearings he insisted that good bearings show dividends.

Mr. R. Hart, in proposing a vote of thanks to Mr. Gardom for his interesting lecture, stated that the East Anglian Section were fortunate in having heard Mr. Gardom on several occasions and each time they had had a most enjoyable evening; this particular lecture had been no exception to the rule. The importance of roller conveyors was perhaps not fully appreciated by foundrymen, but undoubtedly they saved considerable time and fatigue. Although roller conveyors were used extensively in the moulding shops, their application, Mr. Hart thought, could be extended to the fettling shop, where there was much manhandling of castings. No doubt Mr. Gardom, with his wide experience of foundry lay-outs, could suggest something in this direction. Mr. Ward seconded the vote of thanks, which was carried with acclamation.

Birmingham, Coventry and West Midlands

The Birmingham, Coventry & West Midlands Branch of the Institute of British Foundrymen held their Annual General Meeting on April 27, at the James Watt Memorial Institute, Great Charles Street, Birmingham. The retiring President, Mr. John Hird, was in the chair and about fifty members of the Branch were in attendance. The main business of the meeting was the election of Branch Officers for the session 1949-50 and the following were elected:—As *Branch President*, Mr. H. G. Hall, of Walsall; as *Senior Vice-President*, Dr. H. T. Angus, of the British Cast Iron Research Association; as *Junior Vice-President*, Mr. T. R. Twigger, of Coventry.

In his Annual Report Mr. E. R. Dunning, the Hon. Secretary, gave details of the Branch's technical activities during the past session and reported that, in addition to these activities, the Students' Section, under the chairmanship of Mr. D. Marles, had been very active. During the past session an additional Students' Section had been formed in the Coventry district and the Birmingham Branch was now unique in the Institute in that it operated two Students' Sections.

Mr. G. R. Shotton presented a report on the work of the Technical Council of the Institute, which is concerned with research into current problems of the foundry industry.

The meeting concluded with the reading by Mr. A. T. Johnstone of his Paper, entitled "Foundry Contacts," which was received enthusiastically.

The Advance in Steel Prices

An Examination of the Causes and Effects

An increase in iron and steel prices became necessary at the beginning of last month as a result of the Government's decision to pass on to the industry certain losses previously borne by the Exchequer. The increases, however, are discussed in the latest number of the "Statistical Bulletin" issued by the British Iron and Steel Federation. The losses in question arose from a policy adopted at the beginning of 1946. At that date, the wartime arrangements in regard to steel prices, notably the whole Prices Fund machinery, were abandoned and prices were fixed at a uniform level for all firms without any attempt to reduce inequalities of profits as had been necessitated by the abnormal disparities in cost which occurred during the war. The Government did, however, take the view that it would be undesirable at that time to allow home steel prices to be inflated by the abnormally high freights on imported ore and the high prices for steel then prevailing in countries from which we were likely to import. Far from declining, these foreign prices have since tended to rise, so that the losses falling on the Exchequer increased after 1946.

Abnormal Freight Rates

At the outset, much the most important element in these Exchequer losses was attributable to abnormal freight rates, which had risen by the end of the war to about 360 per cent. above the pre-war level. This unprecedented increase was due, in part, to the loss of outward coal cargoes. In the hope that freight rates would return to more normal levels within a reasonable time, the Government decided to stabilise the rates charged to the iron and steel industry at 50 per cent. above pre-war and to debit any excess to Government account. In the event, the fall in freight rates was more gradual than had been expected and the decision was accordingly taken last summer to charge the industry 100 per cent. above the pre-war rates. This cost increase was carried by the steel industry pending the completion of the official price review. As a result of the latest decision, the industry will in future bear the full freight charges, which are still over 200 per cent. above pre-war.

The second charge now being taken over from the Government is the loss incurred on imported scrap and pig-iron, which arose because the foreign prices of these materials were well above the British level. This is an important item which has been expanding rapidly. In 1946 there was a negligible sum to be provided under this head, while in 1947 the booty scrap obtained from Germany was charged to the industry at the British price and no loss appeared in the accounts; in 1948, however, commercial scrap began to flow from Germany, the price going up to a high level. Moreover, since November last, booty or other scrap acquired outside normal commercial channels has been charged at the price for scrap imported commercially.

Besides these losses on imported steelmaking materials, the Exchequer had also borne the cost of purchasing semi-finished and finished steel abroad at the high prices ruling in foreign countries and selling them at the much lower British home trade price. How these Exchequer payments have grown since 1946 may be traced in the following table, which sets out the whole position in some detail. For 1949-50 the losses on all these items, except that on finished steel, are to be transferred from the Exchequer; and the Government estimates that the losses transferred to the industry will total £25,000,000.

Exchequer Losses on Imported Steel and Steelmaking Materials (Import Duties Excluded).

	1946-7.	1947-8.	1948-9.
	(£ Thousands.)		
Imported iron and manganese ore freights	6,775	7,050	6,000
Imported scrap*	206	367	5,410
Imported pig-iron	6	66	766
Home ore	665	792	900
Imported semis	1,600	1,900	2,574
Imported finished steel	300	914	3,150
Total	9,552	11,089	18,800

* Including a small proportion of scrap from special sources. Excluding any losses on booty scrap up till November, 1948.

When the possibility of transferring these losses to the industry was publicly referred to last year, it was estimated that a 5 per cent. increase in steel prices would be required to cover the loss on imported ore and scrap. Since that date, however, imported pig-iron has become available at prices considerably in excess of the British price. The Government has also decided to charge the loss on imported semi-finished steel to the industry. Moreover, the quantity of scrap available from Germany has tended to increase, so that the figure under this head is substantially greater than a year ago. Hence, the total effect on steel prices of transferring these losses is an average increase of approximately 9 per cent., although the actual amount naturally varies considerably from product to product.

Levies on Producers

The decision has been taken to finance the losses, for the present at least, largely by means of levies on producers. Thus, the greater part of the loss on imported raw materials is being carried by a general levy of 26s. per ton of steel-ingot production, representing on the average approximately 36s. per ton of finished steel. In the case of steel castings, 36s. a ton is being collected on the unmachined castings; in all other cases, collection is at the ingot stage. Similarly, for semi-finished steel, the loss is being covered by a levy of 13s. a ton on the home output of semis, whether produced for use in the producer's own works or for sale to another firm. It is proposed to review the amounts of the levies every six months in relation to the import programme and the level of import prices, so that over a period the levy account may be self-balancing.

Even at the higher level now ruling, steel prices show a considerably smaller increase, as compared

with pre-war, than most other basic products. It is estimated that the latest changes may raise the iron and steel component in the Board of Trade index of wholesale prices by about 16 points to around 187 (1938 = 100). On the same base, coal now stands at a figure of 245, while the index for all industrial materials and manufactures is nearly 240.

As to whether the latest increases put British steel prices out of line with those of other countries, it may be said that such international comparisons are not altogether easy to make, especially in view of differences in quality and in methods of quoting as between one country and another. In general, however, British home trade prices are still well below the American level. In the case of sheets and tinplate, however, the British industry has so far only partially reaped the benefits of continuous methods of production. British prices also compare favourably with those of Continental producers.

The fact that steel prices in this country compare so favourably with those of other producers has been attributed by one commentator to the low price paid by British steelmakers for home-bought scrap. It is certainly true that British scrap prices are relatively low, but to fasten attention upon this particular raw material to the exclusion of all the rest is quite misleading; for in other respects the British industry is at a disadvantage compared with its competitors. For every ton of scrap purchased in this country the industry buys nearly 5 tons of coal—and coal prices are approximately 50 per cent. higher here than in the U.S.A. Again, the cost of the iron ores available to Britain is considerably higher than the cost of those used in the U.S.A. The weighted average cost of raw materials used in steelmaking is now 125 to 130 per cent. above the pre-war level. That steel prices have advanced during the same period by less than 90 per cent. is the best possible tribute to the industry's efficiency.

Recent Wills

SCOTT, GEORGE, a director of the Comelybank Foundry Company, Limited, Denny, Stirlingshire £6,695

MURDOCH, JAMES, proprietor of Robert Murdoch & Company, iron and steel merchants, etc., of Glasgow £21,160

ALLEN, S. T., former electrical engineer of the Ebbw Vale Steel & Iron Company, Limited, and late district manager of the Central Electricity Board £17,395

RUMBLE, SIR B. T., chairman of Fullers' Earth Union, Limited, and a director of Wyatt & Company, Limited, tin-box manufacturers, of Tanner Street, London, S.E.1 ... ... £65,156

RANDLES, W. A., assistant on mechanical design to the chief turbine engineer, British Thomson-Houston Company, Limited; associated with the Whittle jet engine from its inception and later with the development of B.T.H. gas turbines £8,312

RYLANDS, SIR W. P., one of the founders and twice president of the Federation of British Industries, president of the Iron and Steel Wire Manufacturers' Association, 1900-37, chairman and managing director of Rylands Bros., Limited, wire manufacturers, of Warrington, chairman of Pearson & Knowles Coal & Iron Company, Limited, a director of the Lancashire & Corby Steel Manufacturing Company, Limited, and other companies, and High Sheriff of Cheshire in 1935 ... ... £192,198

Parliamentary

Price of Zinc

MR. DONNER asked the Minister of Supply why the price of zinc in the United Kingdom was 720 per cent. above the 1938 average, as compared with 225 per cent. dearer than pre-war in the United States.

In a written answer MR. G. R. STRAUSS said that the following factors accounted for the difference in relative prices in the United Kingdom and the United States at the present time and in the pre-war period:—(i) The price of zinc in the U.S.A. in 1938 averaged 4.61 cents a lb. (equivalent to about £21 a ton at the rate of exchange then ruling) whereas the price in London in the same year averaged only £14 a ton; (ii) it was only within the last six weeks that the internal price in the U.S.A. had fallen from 17.5 cents a lb. (£97 7s. 6d. a ton at the present rate of exchange) to 12.5 cents a lb. (£69 10s. a ton); near the beginning of that period (April 4) the price in the United Kingdom was reduced from £106 to £101 a ton; (iii) the U.S.A. prices quoted in (ii) were exclusive, the United Kingdom prices inclusive, of costs of delivery; (iv) we had to buy a large proportion of our zinc metal from the dollar area, but our dollar expenditure was kept to a minimum through our arrangements with the producers in the sterling area, by which we took as much zinc as possible from them. These arrangements included the periodical agreeing of prices and the selling price in the United Kingdom was based chiefly upon the prices so agreed. Current prices were agreed before the latest falls in the American price and the present selling price was related to our current costs.

German Iron and Steel Scrap

MR. PIRATIN asked the Minister of Supply how much German steel scrap had been imported during the last 12 months; how much had been exported from Germany to the United States in the same period; what price was paid by the British and the American buyers, respectively, and in what currency was payment made.

MR. G. R. STRAUSS, in reply, said that during the 12 months ended March 31, 1949, just over 1 million tons of iron and steel scrap were imported into the United Kingdom from Germany. He had no accurate information about the quantity which was imported by the United States, but he understood it was about 625,000 tons during the same period. Prices, of course, varied, but the general price paid by the British was £7 2s. 6d. a ton, free alongside German port. This was paid in sterling. The corresponding price paid by the United States was $28.50, paid in dollars.

BENTO MIGUEL FERNANDES & FILHOS, LDA., 30 and 32, Rua D Joao de Castrol, Nova Goa, Portuguese India, wishes to represent United Kingdom manufacturers of iron bedsteads, enamelled buckets, domestic hollow-ware and cooking stoves. Interested companies should communicate with the firm direct, at the same time notifying the Commercial Relations and Exports Department, Board of Trade, Thames House North, Millbank, London, S.W.1 (reference, E.P.D. 38314/48), of any action taken.

General Refractories' Research Work

New Laboratories Opened

Sir Charles F. Goodeve, Director of the British Iron and Steel Research Institute, opened the new central research laboratories of General Refractories, Limited, at Worksop on April 26. A plaque erected in the entrance hall to the memory of the first chairman of the firm, Mr. Frank S. Russell, was unveiled by Sir Ronald W. Matthews, the present chairman.

"We are rather liable to concentrate our thoughts on research, and perhaps get the idea that research is going to answer some of our problems for us," said Sir Charles Goodeve, speaking at a luncheon held after the opening ceremony. "We shall get out of the immediate problems we are faced with to-day, not by research, but by the effort of men and management in the factories." Referring to co-operative research, Sir Charles said General Refractories, Limited, was among those to recognise that it was not just an altruistic idea, but was good business. It was bad business, he added, that so many scientists were being used to travel the same roads as other scientists. "I do not want to suggest that co-operation is everything, because there is a great deal of activity in various companies in which the whole background and future depends on intense competition. In these cases secret work and non-co-operative work is essential to the progress of the work."

It was clearly important, said Sir Charles, that research workers should have a certain amount of separation from day-to-day problems, but, on the other hand, they must not become so far separated that they were of no practical use.

Mr. R. A. Kirkby, managing director of General Refractories, Limited, said the company might soon reach the limits of usefulness of some of the raw materials it had at its disposal, and might have to employ new ones, probably made synthetically. Consequently, he thought the type of scientist needed was the man who had one eye on the test-tube and the other on the balance-sheet. Research workers must be alive to practical values, and the industrialists who employed them must be men of sufficient imagination and foresight to realise the value of the scientists' work.

Threefold Function

The new laboratories and pilot plant occupy a two-storey building of pale yellow dressed stone and multi-coloured brickwork. Their threefold function will be as an authoritative centre to which all problems of individual works may be referred, for the investigation of performance of refractories in use, and for the development of new processes and new refractory materials and the investigation of phenomena. Facilities include physical, research chemical, sand, and bonding materials laboratories, library and conference room, X-ray room, petrographic room, records room, balance room, dark room, machine room, offices, and stores.

The laboratories are equipped with the most modern facilities, and a centralised organisation will be available to solve major problems covering the whole field of refractories investigation.

News in Brief

THE ADDRESS of the Industrial Welfare Society is now 48, Bryanston Square, London, W.1 (telephone: Ambassador 2401).

THE ALLIED IRONFOUNDERS' exhibition train has completed its tour of the country after having travelled 2,000 miles and visited 25 principal cities.

SHELL-MEX & B.P., LIMITED, has announced a further reduction in the prices of its fuel oils to inland buyers of ¼d. per gall. for B.P. Britoleum, and ½d. per gall. for Shell and B.P. heavy fuel oil.

AN APPLICATION has been made to the London Stock Exchange by Sheepbridge Engineering, Limited, for permission to deal in and for quotations for the entire issued and fully paid-up share capital of the company.

A REDUCTION in the price of Esso fuel oil, by ¼d. a gall. for medium grade and by ½d. a gall. for heavy grade, is announced by the Anglo-American Oil Company, Limited. The company has also announced a reduction of ¼d. per gall. in the price of Esso Autodiesel (fuel for Diesel-engine road vehicles), Esso gas oil, heating oil, Diesel medium, and Marine Diesel medium oils. These price revisions apply only to the inland schedule.

BIRMINGHAM METALLURGICAL SOCIETY'S policy of encouraging young people was emphasised by the president (Mr. W. E. Ballard) at the annual dinner on April 27, when he presented awards to the successful entrants in the Society's essay competition. Some people, he said, held the opinion that provincial societies were superfluous in view of the existence of the larger national institutions, but he felt that the Birmingham Society had done a large amount of work in providing a means whereby younger people could be brought into contact with those who had greater experience.

BRITISH TANKER COMPANY, LIMITED, London, has cancelled options with five shipyards for the building of five tank steamers of 28,000 tons d.w. each. These options were taken up last November, at the time orders were placed for six 28,000-ton turbine-driven tankers (of which they were repeats), and they were declarable by March 31 last. The yards concerned are:—Harland & Wolff, Limited, Belfast; Vickers-Armstrongs, Limited, Barrow-in-Furness; Fairfield Shipbuilding & Engineering Company, Limited, Govan; Cammell Laird & Company, Limited, Birkenhead; and one other yard.

A DEPUTATION from the North-East branch of the Cast Iron Chair Association has interviewed the Northern Regional Board for Industry regarding the plans of British Railways to transfer the making of railway chairs and other equipment from North-East foundries to its own foundry at Horwich, Lancs. The deputation expressed the opinion that this plan was the first step in the transfer of all railway work from private to State-owned works. Sir Mark Hodgson, chairman of the Board, said they were anxious that this industry should be retained in the North-East, and the deputation's case would be submitted to the Board's headquarters in London, where it would be discussed with British Railways and Government departments.

Pig-iron and Steel Production in Great Britain

Detailed Figures for February

The following particulars of pig-iron and steel production in Great Britain have been extracted from the "Statistical Bulletin" for March, 1949, issued by the British Iron and Steel Federation. Table I gives the production of pig-iron and ferro-alloys in February, with the number of furnaces in blast; Table II, production of steel ingots and castings in February, and Table III, deliveries of finished steel. Table IV summarises steel-industry activities during six months ended February, 1949.

TABLE I.—*Weekly Average Production of Pig-iron and Ferro-alloys during February*, 1949. (*Thousands of Tons.*)

District.	Furnaces in blast 26.2.49	Hematite.	Basic.	Foundry.	Forge.	Ferro-alloys.	Total.
Derby, Leics., Notts., Northants, and Essex	26	—	14.3	25.6	1.6	—	41.5
Lancs. (excl. N.W. Coast), Denbigh, Flints. and Cheshire / Yorkshire (incl. Sheffield, excl. N.W. Coast)	6	—	6.9	—	—	1.4	8.3
Lincolnshire	13	—	24.3	0.7	—	—	25.0
North-East Coast	24	8.2	34.9	0.4	—	1.4	45.0*
Scotland	8	0.7	8.8	3.2	—	—	12.7
Staffs., Shrops., Worcs., and Warwick	9	—	9.0	1.5	—	—	10.5
S. Wales and Monmouthshire	8	4.5	18.9	—	—	—	23.4
North-West Coast	7	14.6	—	0.1	—	0.1	14.8
Total	101	28.0	117.1	31.5	1.6	2.9	181.2
January, 1949	103	26.0	116.9	29.6	2.0	3.5	178.1
February, 1948	102	26.0	118.4	26.7	2.3	2.9	176.3

* Includes 100 tons of direct castings.

TABLE III.—*Weekly Average Deliveries of Non-alloy and Alloy Finished Steel.* (*Thousands of Tons.*)

Product.	1947 (53 weeks).	1948.	1948. Feb.	1949. Jan.	1949. Feb.
Non-alloy Steel :—					
Heavy rails and sleepers	7.6	8.9	9.2	9.9	10.4
Heavy and medium plates	31.6	36.2	37.3	35.7	40.3
Other heavy steel products	31.8	34.7	36.6	33.6	38.9
Light rolled products§	52.9	59.5	62.0	45.6	49.3
Hot-rolled strip				16.3*	16.0
Cold-rolled strip	4.6	4.7	4.9	5.1	4.9
Bright steel bars	4.8	6.0	6.2	6.5	6.2
Sheets, coated and uncoated	24.3	26.3	27.2	29.3	29.1
Tin, terne and blackplate	12.1	13.5	13.7	14.6	14.3
Tubes, pipes and fittings	13.5	15.1	14.5	17.0	17.8
Wire	10.8	12.8	12.9	14.5	15.6
Tyres, wheels and axles	3.5	3.9	4.0	4.0	4.0
Forgings	5.0	6.0	5.6	6.3	6.8
Castings	3.0	3.5	3.4	3.5	3.9
Total	205.5	231.1	237.5	241.9	257.5
Alloy Steel† :—					
Plates	—	—	—	—	—
Tubes and pipes	0.3	0.4	0.6	0.5	0.4
Bars, sheets, strip and wire	3.7	4.7	4.4	5.2	5.9
Forgings	1.8	2.5	2.5	3.0	3.0
Castings	0.6	0.7	0.7	0.7	0.8
Total	6.4	8.3	8.2	9.4	10.1
Total U.K. production‡	211.9	239.4	245.7	251.3	267.6
Less intra-industry conversion	19.2	29.0	26.3	32.5	35.2
Net U.K. deliveries	192.7	210.4	219.4	218.8	232.4
Add imported finished steel	2.2	3.4	2.1	5.6	3.9
Total deliveries of finished steel	194.9	213.8	221.5	224.4	236.3

* Estimated. † Excludes high-speed steel.
‡ Includes finished steel produced in the U.K. from imported ingots and semi-finished steel. § Excludes wire rods and alloy steel bars, but includes ferro-concrete bars.

TABLE II.—*Weekly Average Production of Steel Ingots and Castings, February*, 1949. (*Thousands of Tons.*)

District.	Open-hearth. Acid.	Open-hearth. Basic.	Bessemer.	Electric.	All other.	Total. Ingots.	Total. Castings.	Total ingots and castings.
Derby, Leics., Notts., Northants and Essex	—	—	10.6(Basic)	1.5	0.2	11.7	0.6	12.3
Lancs. (excl. N.W. Coast), Denbigh, Flints., and Ches.	1.6	23.4	—	1.3	0.5	25.8	1.0	26.8
Yorkshire (excl. N.E. Coast and Sheffield)								
Lincolnshire	—	27.1	—	—	0.1	27.1	0.1	27.2
North-East Coast	1.2	60.0	—	0.8	0.5	60.9	1.6	62.5
Scotland	5.6	40.3	—	2.2	0.7	47.0	1.8	48.8
Staffs., Shrops., Worcs. and Warwick	—	15.0	—	0.7	0.8	15.1	1.4	16.5
S. Wales and Monmouthshire	11.0	46.2	5.1 (Basic)	0.8	0.1	62.9	0.3	63.2
Sheffield (incl. small quantity in Manchester)	9.0	27.3	—	8.1	0.6	43.2	1.8	45.0
North-West Coast	0.6	3.0	4.8 (Acid)	0.3	0.1	8.6	0.2	8.8
Total	29.0	242.3	20.5	15.7	3.6	—	—	311.1
January, 1949	27.8	223.0	19.6	14.7	3.4	280.5	8.0	288.5
February, 1948	27.1	228.5	17.4	12.9	3.5	281.2	8.2	289.4

(*Continued at foot of facing page.*)

Ironfounders' Increased Costs

Importance of Quality

In a circular letter to shareholders, Mr. Victor Jobson, chairman of Qualcast, Limited, light repetition ironfounders and lawn-mower manufacturers, of Derby, and its subsidiary companies, states that costs still show a regrettable tendency to increase, and in his opinion the peak has not yet been reached. He states that during the half-year to December 31, 1948, the company's increased costs attributable to coal, coke, labour, electricity, national insurance, and pig-iron, averaged 21s. 1d. per ton of good castings. In one foundry where they melted electrically, the increased charge paid for electricity alone augmented the cost by 27s. 6d. per ton. The increase due to national insurance alone came to 1s. 10¼d. per ton over the whole group output. "So much for the alleged benefits due to nationalisation, and pig-iron, our basic raw material, has yet to feel the full effects of it, if and when the Bill presently before Parliament becomes law," writes Mr. Jobson.

Stating that the export market is drying up, owing to currency and import restrictions, and none of us must live in a fool's paradise, Mr. Jobson adds that it is more than ever necessary for everybody to give 21s. value for the £ in the quality of the goods turned out. Selling prices, he claims, have not advanced in proportion to increased costs, but with a relaxation of regulations and supplies of raw material they could easily be reduced, because at present overheads have to be carried on a factory output well below potential capacity in some departments.

"The buyer's market is definitely with us," concludes Mr. Jobson, "and whether or not this portends a slump in demand remains to be seen, but one thing is obvious—that buyers must not expect sweeping reductions in prices, because the increases in manufacturing costs have to be met by the public eventually, and those of us in industry are only intermediaries in the process of conversion from raw material to finished product."

BOLTON CORPORATION has approved plans for a foundry and the layout of site, off Union Road, for Thomas Ryder & Son, Limited.

Obituary

MR. WILLIAM ALEXANDER MACKIE, engineering manager with Wood & Davidson, shiprepairers, of Aberdeen, died recently, aged 68. He had nearly 50 years' association with shiprepairing at the port.

SIR FREDERICK HEATON, who was chairman and managing director of Thomas Tilling, Limited, chairman of Kent Alloys, Limited, and a member of the boards of many other companies, died at Croxley Green, Herts, on April 29. He was 68.

MR. RICHARD EDWIN HATTERSLEY, who died recently, was for many years chairman and managing director of Hattersley (Ormskirk), Limited, engineers, ironfounders, etc., of Ormskirk, Lancs. He was also chairman of Erskine Heap & Company, Limited, manufacturing electrical engineers, of Manchester.

MR. WALTER DENT REDMOND, a director of Sir S. W. Royse & Company, Limited, chemical, ore and metal merchants and exporters, of Manchester, died on April 30 at the age of 57. His association with the firm extended for a period of over 40 years. Mr. Redmond was also a director of Metcalfe's Tar Distillers, Limited, Accrington, and other companies. He had been unwell for several months following a serious motoring accident.

B.S.A. Steel Interests

The directors of the Birmingham Small Arms Company, Limited, announce that one of their subsidiaries, William Jessop & Sons, Limited, was scheduled in the Iron and Steel Bill for acquisition. As has now been announced, the Minister of Supply has invited Parliament to delete Jessops from the third schedule. In last year's report the directors informed stockholders that B.S.A. had purchased the assets of all its wholly owned subsidiaries, including Jessops, as at August 1, 1947. This information was not available to the Minister when the Bill was introduced.

Arrangements have now been made with the Minister whereby, in the event of the Iron and Steel Bill becoming law, the Iron and Steel Corporation may, subject to certain conditions, acquire the steel interests of the Birmingham Small Arms Company.

PIG-IRON AND STEEL PRODUCTION IN GREAT BRITAIN (*Continued from previous page*).

TABLE IV.—*General Summary of Pig-iron and Steel Production.* (*Weekly Average in Thousands of Tons.*)

Period.	Iron-ore output.	Imported ore consumed.	Coke receipts by blast-furnace owners.	Output of pig-iron and ferro-alloys.	Scrap used in steel-making.	Steel (incl. alloy).			
						Imports.‡	Output of ingots and castings.	Deliveries of finished steel.	Stocks.†
1938	228	89	—	130	118	16	200	—	—
1947 (53 weeks)	209	136	165	147	145	8	240	195	797
1948	252	172	200	178	174	8	286	214	1,028
1948—September* ..	273	175	202	181	183	10	297	225	1,002
October	270	175	202	183	184	13	297	223	1,004
November	264	174	205	185	187	13	303	229	1,002
December*	253	162	201	176	173	10	282	216	1,028
1949—January	269	163	202	178	178	8	289	224	1,019§
February	267	160	201	181	198	13	311	236	1,000

* Five weeks. † Stocks at end of years and months shown. ‡ Weekly average of calendar month. § Revised.

Imports and Exports of Iron and Steel

The following tables, based on Board of Trade returns, give figures of imports and exports of iron and steel in March. Figures for the same month in 1947 and 1948 are given for purposes of comparison.

Total Exports of Iron and Steel.

Destination.	Month ended March 31.		
	1947.	1948.	1949.
	Tons.	Tons.	Tons.
Eire	5,011	6,891	6,173
Channel Islands	560	798	811
Gibraltar	61	105	100
Malta and Gozo	520	192	475
Cyprus	322	269	270
British West Africa	3,249	3,182	6,859
Union of South Africa	11,938	10,012	14,725
Northern Rhodesia	658	999	2,288
Southern Rhodesia	740	2,195	4,448
British East Africa	961	5,688	6,960
Mauritius	698	154	568
Bahrein, Koweit, Qatar and Trucial Oman	1,364	5,358	3,675
India	11,601*	3,811	5,425
Pakistan		532	2,199
Malaya	3,241	3,109	5,145
Ceylon	1,076	660	1,294
North Borneo	727	549	396
Hong Kong	1,153	3,477	3,396
Australia	4,167	7,226	9,946
New Zealand	4,959	5,618	8,760
Canada	1,109	3,029	7,213
Bermuda	18	5	67
British West Indies	2,393	5,121	6,048
British Guiana	431	601	264
Anglo-Egyptian Sudan	1,336	1,019	2,165
Other British countries	393	1,283	860
Russia	175	3,671	609
Finland	486	3,328	4,999
Sweden	4,970	8,896	4,994
Norway	3,360	4,446	7,726
Iceland	619	238	651
Denmark	5,361	6,221	10,390
Poland	29	129	64
Germany	29	7	33
Netherlands	7,081	7,496	10,556
Belgium	1,940	772	856
France	3,927	613	1,182
Switzerland	1,397	919	1,149
Portugal	729	4,276	2,460
Spain	324	897	560
Italy	1,167	102	212
Hungary	11	5	—
Czechoslovakia	290	8	44
Greece	779	204	175
Turkey	1,940	1,198	728
Dutch East Indies	1,604	1,551	4,526
Dutch West India Islands	532	529	309
Belgian Congo	260	158	145
French W. and Eq. Africa	78	117	73
Portuguese East Africa	158	238	621
Canary Islands	203	271	312
Syria	156	69	358
Lebanon	570	264	5,676
Palestine (Israel)	1,701	1,080	1,644
Egypt	3,805	3,751	6,866
Morocco	128	93	28
Iraq	4,563	5,153	2,375
Iran	4,752	11,660	12,543
Burma	1,627	1,795	1,443
Siam (Thailand)	350	302	391
China	1,949	1,865	477
U.S.A.	356	213	445
Cuba	41	199	15
Colombia	108	597	483
Venezuela	2,939	4,636	7,443
Ecuador	804	856	443
Peru	420	386	285
Chile	650	684	546
Brazil	3,008	280	2,024
Uruguay	1,310	456	807
Argentine Republic	6,573	8,608	3,695
Other foreign countries	1,882	1,811	2,250
Total	133,777	162,931	204,141

* Figures for 1947 relate to British India.

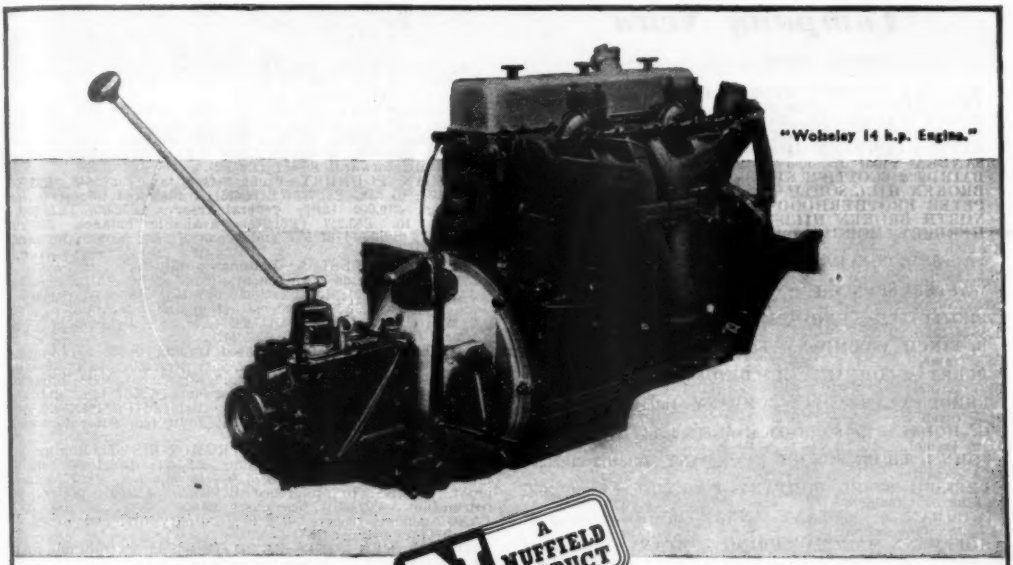
Total Imports of Iron and Steel.

From	Month ended March 31.		
	1947.	1948.	1949.
	Tons.	Tons.	Tons.
Australia	10,633	275	126
Canada	20,365	6,193	5,887
Other British countries	51	105	67
Sweden	628	1,549	2,045
Norway	1,915	2,098	2,411
Germany	—	5	263
Netherlands	1,706	1,547	5,366
Belgium	2,414	10,621	40,810
Luxemburg	422	632	20,495
France	634	87	17,166
U.S.A.	23,683	16,032	14,160
Other foreign countries	245	91	4,833
Total	62,696	39,235	113,629
Iron ore and concentrates—			
Manganiferous	—	—	—
Other sorts	463,610	685,080	652,898
Iron and steel scrap and waste, fit only for the recovery of metal	8,558	23,099	65,052

Exports of Iron and Steel by Product.

Product.	Month ended March 31.		
	1947.	1948.	1949.
	Tons.	Tons.	Tons.
Pig-iron	3,078	125	187
Ferro-alloys, etc.—			
Ferro-tungsten	44	18	71
Spiegeleisen, ferro-manganese	781	23	208
All other descriptions	75	50	120
Ingots, blooms, billets and slabs	652	489	70
Iron bars and rods	317	462	834
Sheet and tinplate bars, wire rods	234	183	197
Bright-steel bars	2,094	1,912	2,473
Other steel bars and rods	10,126	8,418	12,876
Special steel	1,317	1,445	1,202
Angles, shapes and sections	5,490	6,745	12,251
Castings and forgings	289	637	724
Girders, beams, joists and pillars	1,062	2,246	2,669
Hoop and strip	2,705	3,108	3,540
Iron plate	95	125	437
Steel plate, ¼ in. thick and over	9,460	12,231	19,340
Do., under ¼ in. thick	6,205	7,762	12,762
Galvanised sheets	3,127	6,076	8,837
Tinplates	13,736	17,266	16,398
Tinned sheets	430	307	337
Terneplates	37	—	—
Decorated tinplates	2	57	—
Other coated plates	118	321	412
Cast-iron pipes, up to 6-in. dia.	3,346	6,116	7,421
Do., over 6-in. dia.	2,584	3,281	7,301
Wrought-iron tubes	17,178	25,513	31,134
Radiators, central-heatg. boilers	183	234	291
Railway material	11,859	19,204	15,974
Wire	4,644	3,747	4,510
Cable and rope	2,310	2,461	2,603
Netting, fencing and mesh	1,181	1,410	1,557
Other wire manufactures	586	614	1,175
Nails, tacks, studs, etc.	885	544	706
Rivets and washers	533	687	839
Wood screws	340	491	330
Bolts, nuts and metal screws	1,651	1,785	2,397
Stoves, grates, etc. (excl. gas)	455	1,215	931
Do., gas	98	240	276
Sanitary cisterns	61	118	209
Baths, sinks, etc.	161	630	832
Fencing material	603	542	483
Anchors, etc.	557	882	975
Chains, etc.	484	854	915
Springs	814	414	710
Hollow-ware	4,332	5,718	6,196
All other manufactures*	17,458	16,225	20,381
Total	133,777	162,931	204,141

* Figures for 1949 are not completely comparable with those for previous years.



A NUFFIELD PRODUCT

Using

STANTON-DALE

REFINED PIG IRON

USED AND RECOMMENDED
FOR ALL HIGH-DUTY
ENGINEERING CASTINGS

THE STANTON IRONWORKS COMPANY LIMITED, Nr. NOTTINGHAM

Company News

(Figures for previous year in brackets.)

MAYOR & COULSON—Dividend of 15% (10%).
LIGHTALLOYS—Interim dividend of 5% (same).
ROBEY & COMPANY—Dividend of 10% (same).
FORD MOTOR COMPANY—Dividend of 10% (same).
BETTS & COMPANY—Interim dividend of 5% (same).
SANBRA—Final dividend of 12½%, making 20% (same).
BAIRDS & SCOTTISH STEEL—Dividend of 10% (same).
BROKEN HILL SOUTH—Interim dividend of 50% (30%).
PETER BROTHERHOOD—Interim dividend of 8% (same).
NORTH BROKEN HILL—Interim dividend of 70% (50%).
HERBERT MORRIS—Interim dividend of 5%, tax free (same).
TRUSSED CONCRETE STEEL COMPANY—Dividend of 10% (nil).
WALTER SPENCER & COMPANY—Interim dividend of 5% (same).
PROJECTILE & ENGINEERING COMPANY—Dividend of 12½% (10%).
B. FINCH & COMPANY—Final dividend of 24%, making 30% (same).
PERRY & COMPANY (HOLDINGS)—Interim dividend of 2½% (same).
FREDERICK BRABY & COMPANY—Interim dividend of 2½% (same).
G. HOPKINS & SONS—Final dividend of 11¼%, making 17½% (same).
JOHN I. THORNYCROFT & COMPANY—Interim dividend of 5% (same).
PRESSED STEEL COMPANY—Final dividend of 20%, making 30% (same).
COCHRAN & COMPANY ANNAN—Interim dividend of 1½%, tax free (same).
HOFFMANN MANUFACTURING COMPANY—Dividend of 7½%, tax free (same).
NATIONAL ELECTRIC CONSTRUCTION COMPANY—Dividend of 10% (same).
CRITTALL MANUFACTURING COMPANY—Interim dividend of 10% (same).
BRITISH TABULATING MACHINE COMPANY—Interim dividend of 7½% (same).
BABCOCK & WILCOX—Final dividend of 7% and bonus of 3%, making 15% (same).
GARRARD ENGINEERING & MANUFACTURING—Final dividend of 12½%, making 25% (same).
INTERNATIONAL TWIST DRILL COMPANY—Final dividend of 50% (25%), making 100% (125%).
JOSHUA BIGWOOD & SON—Final dividend of 3⅛% (10%), making 18⅞% for 15 months (15% for year).
MIDLAND BRIGHT DRAWN STEEL & ENGINEERING COMPANY—Interim dividend of 20% (same).
SYDNEY S. BIRD & SONS—First and final dividend of 10% (two payments of 15% each, making 30%).
BRITISH THERMOSTAT COMPANY—Final dividend of 17½% (11% and bonus of 5%), making 25% (23½%).
KERRY (GT. BRITAIN)—Final dividend of 10% (7½% for 10 months), making 15% (12½% for 10 months).
ASSOCIATED ELECTRICAL INDUSTRIES—Final dividend of 10% (7½% and bonus of 2½%), making 15% (same).
ALBRIGHT & WILSON—Final dividend of 15%, making 25%. The company was made public in March, 1948.
CHLORIDE ELECTRICAL STORAGE COMPANY—Final dividend of 5% and bonus of 10%, making 20% on the "A" and "B" shares (same).
LAKE & ELLIOT—Interim dividend of 10% (5%). The company states that the increased payment is not an intimation that the year's dividend will be raised.
WILLIAM BEARDMORE & COMPANY—Final dividend of 8⅓% and bonus of 5%, making 17⅓%, less tax (same, plus special distribution of 25%, not subject to tax, out of profits on realisation of capital assets).
MANGANESE BRONZE & BRASS COMPANY—Profit for 1948, £286,859 (£230,212); to depreciation, £50,190 (£49,835); directors' emoluments, £7,839 (£7,100); income tax, £97,144; profits tax, £33,000; final dividend of 20%, making 30% (same); forward, £71,690 (£45,407).
PEERLESS & ERICSSON—Interim dividend of 20% (single payment of 30%). The board announces that it has every reason to believe that it will be able to call the annual meeting by the middle of July, when the final dividend for the year will be announced.
WILLIAM DIXON—Net profit for the year to February 28, £11,492; brought in £84,366; to preference dividend, £5,000 net; final ordinary dividend of 7½%, making 10% (same); dividend on the £100,000 preference stock repaid to stockholders, £1,146; forward, £85,159.
CHARLES NEIL & COMPANY—Net profit for 1948, after all charges and tax, £14,293 (£8,819); to general reserves, £5,000 (nil); final dividend of 25%, tax free, making 50%, tax free (same); building reserve, £2,500 (£1,500); capital reserve, £283 (nil); forward, £8,612 (£8,302).
VULCAN FOUNDRY—Profit, after tax, for 1948, £73,705 (£58,853); to tax, £81,748 (£112,473); transferred to reserve for pensions, £10,000 (nil); general reserve, £30,000 (£35,000); brought in, £52,257 (£61,366); available balance, £83,212 (£82,469); dividend of 5%, and bonus of 1½% (same); forward, £53,000.
SANGAMO WESTON—Trading profit for 1948, £297,372 (£211,607); taxation adjustment, etc., £1,782 (nil), making £302,918 (£213,422); to taxation, £139,865 (£99,665); depreciation, £44,952 (£32,395); reconstruction and alterations, £2,372 (£1,227), etc.; net profit, £113,293 (£76,255); dividend of 17½% (same); forward, £333,974 (£235,840).
QUICKTHO (1928)—Consolidated trading profit to January 31, £25,771; investment income, £261; deferred repairs reserve no longer required, £647; war damage payment, £745; brought in, £4,996; to directors' remuneration, £4,550; tax, £12,269; written off patent licences, £1,000; dividend for 1948, £2,864; proposed dividend for 1949, £2,864; audit fee, £168; forward, £8,705.
LAURENCE SCOTT & ELECTROMOTORS—Trading profit for 1948, £323,876; to depreciation, £28,421; directors' emoluments, £29,310; profits tax, £38,000; income tax, £110,000; net profit, £118,145; to preference dividends, £10,609; preference redemption, £22,000; pensions, £9,000; deferred annuity, £4,500; general reserve, £45,581; ordinary dividend of 12½% (same); forward, £7,475 (£8,588).
JOHN BAKER & BESSEMER—Consolidated trading profit for 1948, £187,673; interest, investment income, etc., £7,190; to depreciation, £20,030; directors' fees, £2,255; managerial, £36,486; profits tax, £29,841; income tax 1948-49 of subsidiaries, £1,648; net balance, £104,602; to dividend on first and second preference shares, £10,398; to outside holders, £14; ordinary dividend of 30%, £40,912; forward: parent £118,253, subsidiaries £22,444.
THARSIS SULPHUR & COPPER COMPANY—Trading profit in 1948, £305,981 (£269,112); to administration expenses, £28,113 (£20,029); written off property and plant, £45,836 (£41,040); auditor's fees, £350 (same); directors' remuneration, £15,000 (same); tax, £117,162 (£109,325); net profit, £99,520 (£83,368); brought in, £148,359 (£106,489); available, £247,879 (£199,921 with £10,064 from tax reserve); dividend of 7½% (same); forward, £196,316.
FRANK HAWKER—Consolidated profit and loss account for 1948 shows, after £3,431 for depreciation, trading profits of £12,511; to tax, £6,401; proportion of net profit attributable to outside interest, £203; retained by subsidiary companies, £270; carried to appropriation account, £5,637; investment reserve not required, £106; brought in, £3,549, making available balance £9,292; dividend of 7½% (same), £1,650 net; buildings development reserve, £4,000; forward, £3,642.
METROPOLITAN-CAMMELL CARRIAGE & WAGON COMPANY—Balance from 1948 consolidated trading account, including sundry income, £711,332; to directors' emoluments, £18,505; loan interest, £20,000; depreciation, £76,309; transferred to provisions, £31,825; tax, £311,522; net profit, £253,180; brought in, £119,789; excess tax revenue, £25,927; available, £398,896; to written off patents, £12,500; general reserve, £161,332; dividend of 10%, tax free, £100,031; forward, £125,033.
STURTEVANT ENGINEERING COMPANY—Consolidated trading profit, etc., for 1948, £312,851 (£117,260); to depreciation, £6,600 (£4,120); taxation, £160,650 (£64,311); net profit, £145,601 (£48,829); provisions freed, nil (£17,406); transfer to general reserve, £80,000 (£24,000); off goodwill, nil (£13,998); dividends, £27,122 (£20,342); balances forward, £68,040 (£39,803); trading profit, etc., of parent company, £293,511 (£100,899); final dividend of 11% (same) and jubilee bonus of 5% (nil), making 22% (16½%, net).
BREEDON & CLOUD HILL LIME WORKS—Trading profit for the year to January 31, including rents of cottages, £90,346 (£83,079); other income, £1,061 (£251); to depreciation, £14,400 (£10,000); directors' remuneration, £3,146 (£3,100); auditors' fees, £210 (same); taxation, £38,841 (£32,521); profit,

The

Screenarator

WHEEL it to where sand needs reconditioning. Plug in to the nearest power socket and switch on. As fast as men can shovel, the Screenarator will convert knocked-out sand into screened, blended, aerated, conditioned sand ready for the moulders. Folder 140 tells more about it.

Herbert Morris Ltd. Loughborough England

Made under licence from The Beardsley & Piper Co., Chicago

£34,810 (£37,499); to taxation reserve, £6,000 (same); reserve against investments, nil (£3,500); general reserve, £5,000 (same); final dividend of 27½%, making 35% (same); forward, £11,575 (£10,624).

CAMMELL LAIRD & COMPANY—Trading profit in 1948, £811,939 (£690,143); sundry revenue, £318,348 (£295,253); to depreciation, £76,570 (£101,807); directors' emoluments, £57,886 (£46,433); debenture interest, £14,955 (£15,490); debenture sinking fund, £14,045 (£13,510); Government stocks written down, nil (£76,543); tax, £557,000 (£373,434); net profit, £409,831 (£358,779); brought in, £158,124 (£126,260); available, £567,955 (£485,039); final dividend of 7½% making 12½% (same), and tax-free bonus of 3% (same); general reserve, £200,000 (£151,634); forward, £192,673.

SUMMS MOTOR UNITS—Trading profit for 1948, £130,763 (£63,247); to depreciation, £28,173 (£23,085); pension fund, £6,359 (£5,796); interest on bank overdraft, £6,176 (£1,380); directors' emoluments, £8,047 (£14,250); auditors' remuneration, £652 (£552); net profit, £81,356 (£18,184); brought in, £23,728 (£28,544); taxation provisions not now required, £6,000 (nil); profit of prior years not ascertained, £19,035 (nil); making £130,119 (£46,728); to taxation, £56,200 (£12,000); dividend of 15% (5%), £20,625 (£6,875); deferred repairs reserve, £5,000 (nil); forward, £44,169 (£23,728).

ENGLISH STEEL CORPORATION—Income for 1948, £2,827,243 (£1,851,831); to depreciation, £597,078 (£576,000); debenture interest, £64,330 (£55,830); directors' emoluments, £46,404 (£34,525); auditors' remuneration, £1,070 (£1,052); tax, £1,046,766 (£761,174); stock provision, nil (£98,682); net profit, £1,081,596 (£324,568); brought in, £194,017 (£192,816); available, £1,275,612 (£517,384); to debenture sinking fund, £26,492 (£24,992); surpluses to reserves, nil (£14,617); preferred and deferred ordinary dividends, £283,758 (same); forward, £965,362; unrequired provisions aggregating £3,262,398 transferred to reserve account.

MELLOR, BROMLEY & COMPANY—Consolidated accounts to February 28 show trading profit, £366,306 (£242,430); dividends and interest, £433 (£1,052); to depreciation, £27,018 (£21,544); employees' pensions, £4,934 (£4,463); directors' emoluments, £49,691 (£35,718); audit, £1,189 (£1,151); superannuation fund, £1,500 (£1,000); tax, £147,492 (£86,098); consolidated net profit, £134,915 (£93,508); dealt with in parent company's accounts, £93,092 (£73,636); in subsidiaries' accounts, £41,823 (£19,872); brought in by parent company, £71,781 (£61,627), making £164,873 (£135,263); dividend of 54% (same); reserve, £30,000 (£15,000); forward, £86,391.

STEWARTS AND LLOYDS—Consolidated accounts for 1948 show manufacturing and trading profit of parent company for 1948, £3,656,050 (£3,108,522); and of subsidiaries £2,929,350 (£2,221,042); income from investments, etc., £388,607 (£319,411); to emoluments to directors of parent company, £59,986 (£61,955); pensions to directors, £6,203 (£5,428) benefit funds, £246,493 (£209,818) debenture redemption, £51,822 (£46,714); interest on debenture and secured loans, £165,840 (£164,702); depreciation, £1,127,925 (£936,299); profits tax, £647,000 (£556,325); aggregate profits, £4,668,738 (£3,667,734); to U.K. income tax, £1,651,667 (£1,372,778); aggregate net profit, £3,017,071 (£2,294,956); to outside holders of subsidiaries, £149,077 (£72,699); retained by subsidiaries for special appropriations, £469,043 (£326,595); net profit of Stewarts and Lloyds, £2,398,951 (£1,895,662).

JOHN DALE—Group trading profit for 1948, £144,568 (£150,075); profit on metal transactions, £23,502 (nil); sundry receipts, £887 (£791); to directors' emoluments, £23,810 (£18,618); pensions, £4,429 (£3,851); interest, £8,285 (£7,215); depreciation, £20,506 (£13,069); off subsidiary preliminary expenses, £105 (nil); subsidiary profit to minority interest, £1,103 (£1,492); profit, £110,719 (£106,631); to taxation, £54,470 (£53,918); plant reolacement, £23,000 (£7,000); preference dividend, £4,331 (£4,744); preference dividend accrued, two months to December 31, 1948, £1,650 (nil); ordinary interim dividend of 7½% on £75,000 capital, £1,650; final dividend of 12½% on £150,000 capital, £10,312 (20%, £8,250); leaving £13,862 (£32,719), plus £137,634 (£99,915) brought in; tax over-provided, £3,096 (£5,000); to general reserve, £50,000 (nil); forward: subsidiary £10,005, parent £94,587.

JOHN SUMMERS & SONS—Consolidated trading profit for 1948, after charging directors' emoluments, £2,379,217 (£2,558,057); gross income from investments, interest and income from property, £96,827 (£80,566); to depreciation, £444,362 (£371,837); special provision representing taxation relief in respect of capital expenditure, £93,382 (£71,617); net profit, £1,938,300 (£2,195,169); to profits tax, £352,295 (£368,226); income tax, £724,576 (£867,583); applicable to shares held outside group, £3,306 (£2,360); surplus applicable to group holdings, £858,123 (£957,010); brought in, £929,108 (£906,194); off shares in subsidiary operating abroad, nil (£127,910); special pensions and welfare, £33,063 (£75,000); to general reserve, £350,580 (£205,900); contingencies, nil (£50,000); stock reserve, £59,054 (£101,153); preference dividend, £74,248 (£71,193); final ordinary dividend of 6%, making 8½% (same); unappropriated, £967,346.

JOHNSON & PHILLIPS (incorporating Johnson & Phillips S.A. (Propr.), and Godfrey Pty (Australia)—Trading profit for 1948, £610,805; income from investments, etc., £23,790; to directors' fees, £3,750; audit, £1,828; interest on loan and bank overdraft, £20,632; depreciation, £49,787; pensions and group life assurance, etc., £56,257; off shares in Godfrey Pty., £5,169; taxation, £258,000; net profit, £239,181; final dividend of 7½%, making 15%, £88,028; to capital reserve, £118,198; reserves (S.A.), £4,400; research and development, £50,000; forward, £123,337. Emoluments payable to directors were as follow: As directors, £4,475; as executives, £15,765. SCOTTISH GROUP—Profit and loss for the 21 months to December 31, 1948, as regards Aurora Lamps and for the 16 months to December 31, 1948, as regards British National Electrics: Trading profit, £33,598; to fees, interest, depreciation, pensions and taxation, £23,438; to outside preference holders, £733; to reserve, £9,069; balance, £5,279.

VICKERS—Group's trading profit for 1948, £7,927,184 (£5,251,071); income from subsidiary companies not consolidated, £6,013 (nil); dividends and interest, £664,363 (£529,854); profit on sale of Government securities, £57,788 (£4,608); making £8,655,353 (£5,785,533); to provision for depreciation, £1,367,489 (£1,216,133); directors' remuneration, £194,194 (£160,923); auditors' remuneration, £13,228 (£12,575); debenture interest, £33,898 (£34,756); provision for possible loss on trade investment, £153,750 (nil); tax, £3,090,092 (£1,848,440); attributable to outside interests, £428,154 (£113,312); profit, £3,373,948 (£2,399,394); to which is added provisions made by subsidiaries not now required, £2,123,036 (£2,725,177); brought in, £4,992,914 (£3,592,062); balance available, £10,489,898 (£8,790,646, including £74,013 profit on sales of properties and investments); to provisions for pensions, £1,012,167 (nil); debenture sinking fund, £22,302 (£21,444); general reserves, £1,840,171 (£3,027,438); parent company's ordinary dividend of 12½% (same); preference dividends, £332,962 (same); forward, £6,858,951.

Gamma Rays for Industry

Radium and radon, which are sources of highly penetrative gamma rays, can now be supplied for industrial radiography. Radiography, which is the most versatile of all non-destructive testing techniques, makes use mainly of X-rays and gamma rays. The penetration power of gamma radiation, it is stated, is comparable with that of the most powerful X-ray apparatus at present available for industrial radiography.

Radium, which is best suited to factories and foundries where there is constant radiographic work, is available on hire only; the radium will remain the property of the Government. It can be hired for periods of not less than six months, and the average time to fulfil an order is two months. Radon is sold outright, and only one week's notice of an order is required.

Demonstrations of gamma radiography for industrialists can be seen by appointment at the Ministry's Armament Research Establishment, Woolwich, and at the National Physical Laboratory, Teddington. Radium and radon are supplied by the Radiochemical Centre, Amersham, Bucks, and applications for purchase or loan should be addressed to that establishment.

NEW

CHELFORD

Processed Washed Sand

A modern plant has been installed for the washing and grading of Chelford Sand. This plant is of the latest and most efficient type and Chelford Processed Sand can now be supplied thoroughly washed and in two grades, coarse and fine. The chief features are as follows :—

COARSE GRADE

Grading mainly between 30 and 85 mesh B.S.S. and practically free from fines below 85.

Uniform grading gives closer control of mixtures.

Increased permeability.

Negligible clay content.

Superior to natural sand for special purposes e.g. synthetic moulding mixtures, cement moulding process, etc.

FINE GRADE

Practically all passing 60 mesh B.S.S. with main grain size between 72 and 150.

Uniform grading.

Low clay content with increased refractoriness.

Excellent for fine cores and for addition to facing sand mixtures where smooth finish is desired.

GENERAL REFRACTORIES LTD

GENEFAX HOUSE · SHEFFIELD 10 · Telephone SHEFFIELD 31113

Raw Material Markets

Iron and Steel

The strong demand for castings ensures the full operation of foundries generally and the consumption of all available tonnages of pig-iron and hematite. High-phosphorus pig-iron is still difficult to obtain and, although present outputs will be increased when the furnaces now being relined are again in blast, the overall output will not show any appreciable improvement until new units are in commission, including the one in the Derbyshire area now under construction. It is expected that the demand for pig-iron from the light foundries will increase in the near future due to the larger supplies of castings required for the building trades.

The total production of low- and medium-phosphorus pig-iron is quickly absorbed by the engineering, speciality and jobbing foundries and all available supplies of hematite are also accepted by them. There is little margin for stocking purposes when current needs have been satisfied and, indeed, in some cases available supplies of pig-iron are having to be augmented with refined grades. Improved deliveries of hematite will no doubt be obtained when the supply of basic pig-iron for steel production is on a better scale than at present. There is an undiminished call for cast-iron and steel scrap and improved supplies would be welcomed.

The light re-rollers continue to obtain improved outputs of small sections, bars and narrow strip, and the better supply of small square and flat billets from the Continent has enabled them to deal more effectively with their commitments. They still have heavy order-books both for home and export, however. The supply of sheet bars is still insufficient to meet the requirements of the sheet mills and they could easily utilise larger supplies to satisfy the heavy demand for both black and galvanised sheets. The re-rollers of the larger sizes continue to receive improved supplies, but, nevertheless, all the defective material such as billets, slabs and crops which arises is accepted readily.

Non-ferrous Metals

Figures for March have been published by the British Bureau of Non-ferrous Metal Statistics, from which it is evident that during the first quarter at any rate business in non-ferrous metals kept up well. Consumption of copper in March amounted to 48,368 tons, or more than 6,000 tons over the February total. The division of the March figure showed 32,634 tons of virgin copper and 15,734 tons of secondary, compared with 29,633 tons of virgin in February and 12,405 tons of secondary metal. It is apparent, therefore, that March was an active month and, in fact, the best in the first quarter of this year. For the first three months of 1949 the total copper consumption in the United Kingdom was 134,757 tons, compared with 143,611 tons in the corresponding quarter of last year. Stocks of copper in the country at the end of March were about 99,000 tons, some 6,000 tons lower than at February 28. Zinc stocks (41,570 tons) were rather higher. In lead the position improved from a figure of 21,286 tons in stock at February 28 to 23,673 tons at the end of March. But demand for lead is slack, and the British price of £106 is very much higher than the level ruling in America, for on Saturday the quotation came down to 14 cents per lb., equal to about £78 per ton.

Last week also saw a further setback in the copper quotation, for first of all there was a reduction to 20 cents per lb. by one of the big producers who had hitherto remained at 23¼ cents, and then at the end of the week Kennecott Copper Corporation was reported to have decreased its selling limit by 5 cents to 18½ cents per lb., thus equalling the custom smelters' price. Unfortunately, the Ministry of Supply has made no change in its figure of £140 per ton, and consumers in the U.K. are therefore being forced to pay nearly £40 above the world price for their metal. Business in Britain is, of course, practically non-existent, for everyone is expecting the sterling prices of copper, lead and zinc to fall and is holding back accordingly.

Awards for Metallurgical Papers

The Capper Pass Awards Adjudicating Committee has made the following awards for 1948, on behalf of the Councils of the Institution of Mining and Metallurgy and of the Institute of Metals:—

MR. C. BLAZEY, MR. L. BROAD, MR. W. S. GUMMER and Mr. D. P. THOMPSON (Metal Manufacturers, Limited, Port Kembla, N.S.W., Australia) £50 jointly for a Paper on "The Flow of Metal in Tube Extrusion"; MR. H. R. POTTS (Minas de Rio Tinto) £50 for a Paper on "Further Notes on Converter Practice at Rio Tinto"; MR. R. C. TRUMBULL (Pyrites Company, Inc.), MR. W. HARDIEK (Pyrites Company, Inc.) and MR. E. G. LAWFORD (Rio Tinto Company, Limited) £50 jointly for a Paper on "Notes on the Treatment of Pyrites Cinders at the Plant of the Pyrites Company, Inc., Wilmington, Delaware."

The awards are made annually from a sum of £200 per annum placed at the disposal of the Councils by Capper Pass & Son, Limited, Bristol.

Institute of Metals Appointments

The Council of the Institute of Metals has appointed the following members to be honorary corresponding members to the Council for their respective countries:—

BELGIUM — Henri Féron, administrateur-directeur, Visseries et Tréfileries Réunis S.A., Haren.

HOLLAND—Max Hamburger, director, Royal Nederlandsche Lood-en Zinkpletterijen voorheen A.D. Hamburger, Utrecht.

ITALY—Dott. Leno Matteoli, vice-director, Instituto Scientifico Tecnico Ernesto Breda, Sesto S. Giovanni, Milano.

Non-ferrous Metals Director

Mr. A. H. Searl is succeeding Mr. A. G. Charles as director of Non-ferrous Metals on the return of the latter to the British Metal Corporation, Limited. Mr. Searl was formerly deputy-director of Non-ferrous Metals.